

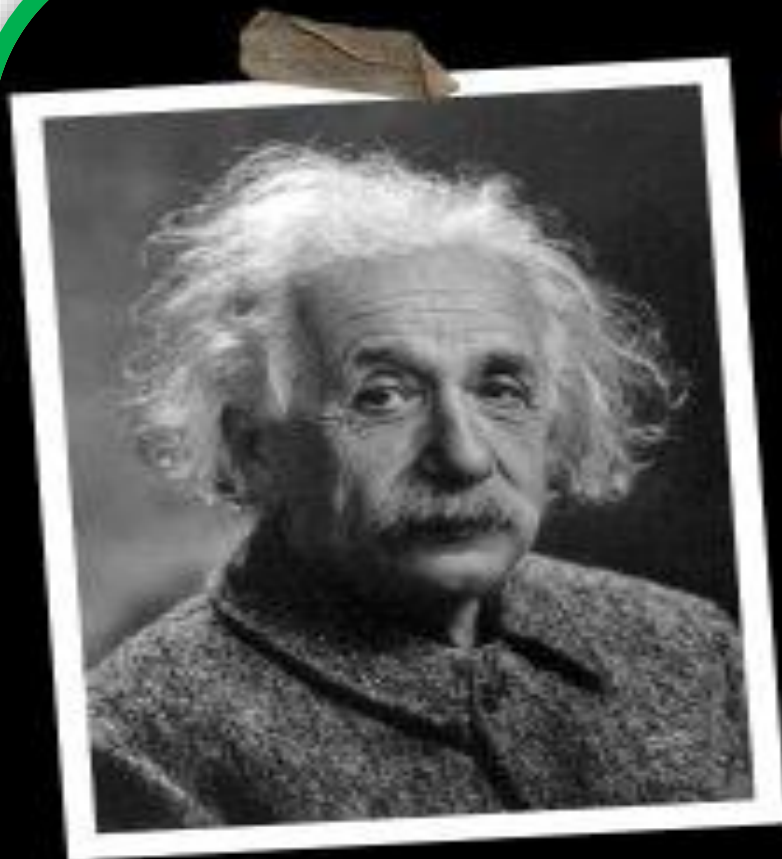
How to be the champion for research funding from International Organizations/Donors



by
Professor Dr. Metha Wanapat

Senior Research Scholar of KKU
World's Top 2% Scientists by Stanford University Ranking
High-end Foreign Expert & Friendship Award, BRI-PR. China

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**“Imagination is
more important
than knowledge.”**

— Albert Einstein



"Life is like riding a
bicycle. **To keep
your balance you
must keep moving.**"

Albert Einstein



THE 45 YEARS OF DEDICATION PROF. DR. METHA WANAPAT'S SCIENTIFIC CAREER PATH BY ENGAGING IN GLOBAL SCIENTIFIC PLATFORMS



1980s

Early
Career

Early Career

- Began his academic and research journey after graduation
- Established foundational work in ruminant nutrition and tropical livestock feeding systems

Research Development and Expansion

- Lead innovative studies in sustainable feeding systems, methane mitigation, and functional feeds
- Served as extended, building a strong global research profile

Global
Engagement

2000s-2010s

Leadership and Mentorship

- Guiding young scientists in Thailand and abroad through mentorship and training programs
- Strengthen global scientific collaborations particularly in Asia-Pacific

2010s-2020s

Global
Engagement

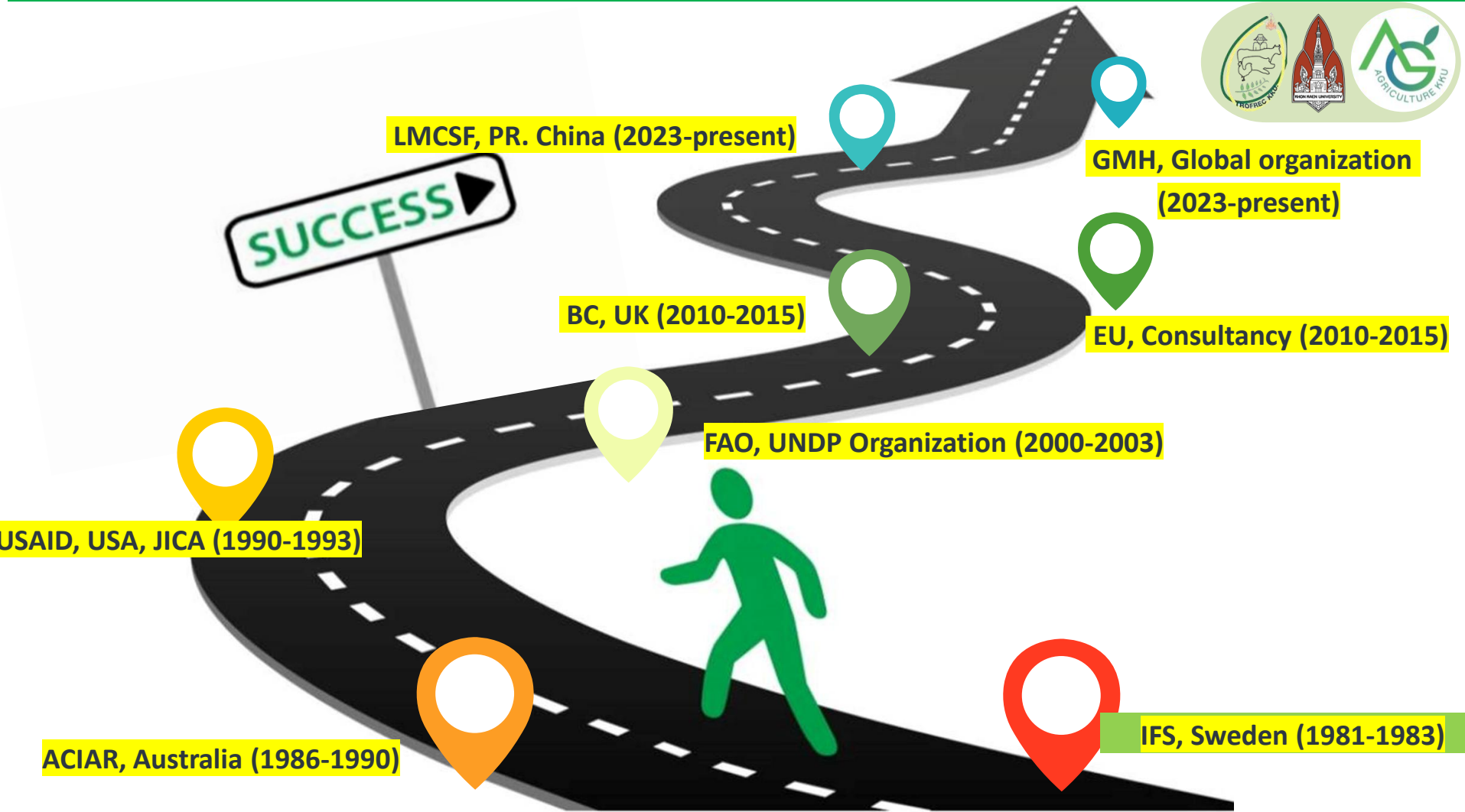
Global Recognition

- Recognized as a highly-celebrated scientist with over 380 publications and H-index of 45
- Continues to contribute to global scientific platforms, influencing

Global
Recognition

Present

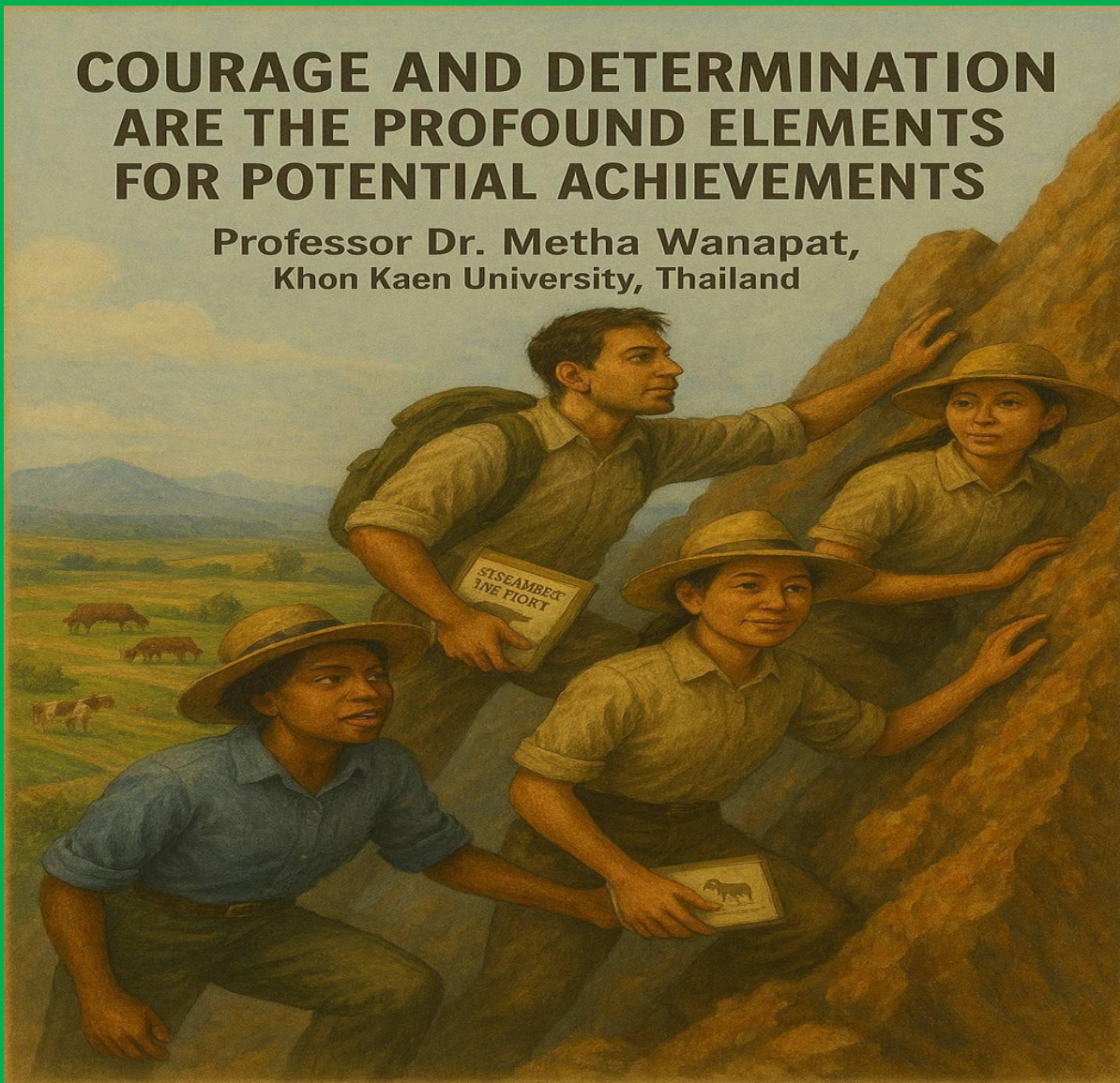
Initiatives and strong passions will lead to potential outputs, outcomes and impacts...since 1980 for 45 years..





COURAGE AND DETERMINATION ARE THE PROFOUND ELEMENTS FOR POTENTIAL ACHIEVEMENTS

Professor Dr. Metha Wanapat,
Khon Kaen University, Thailand



THE WORLD IS DYNAMIC, SO SCIENTISTS MUST IMPROVE IN...



ADAPTABILITY AND LIFELONG LEARNING

Senior scientists must stay updated while mentoring, and young scientists must remain open to guidance while exploring emerging knowledge.



INTERDISCIPLINARY COLLABORATION

Global challenges require solutions that cut across disciplines. Together, senior and young scientists can form powerful networks



ETHICS, INTEGRITY, AND RESPONSIBILITY

As research impacts society and the environment, maintaining ethical standards is essential for



INNOVATION AND TECHNOLOGY INTEGRATION

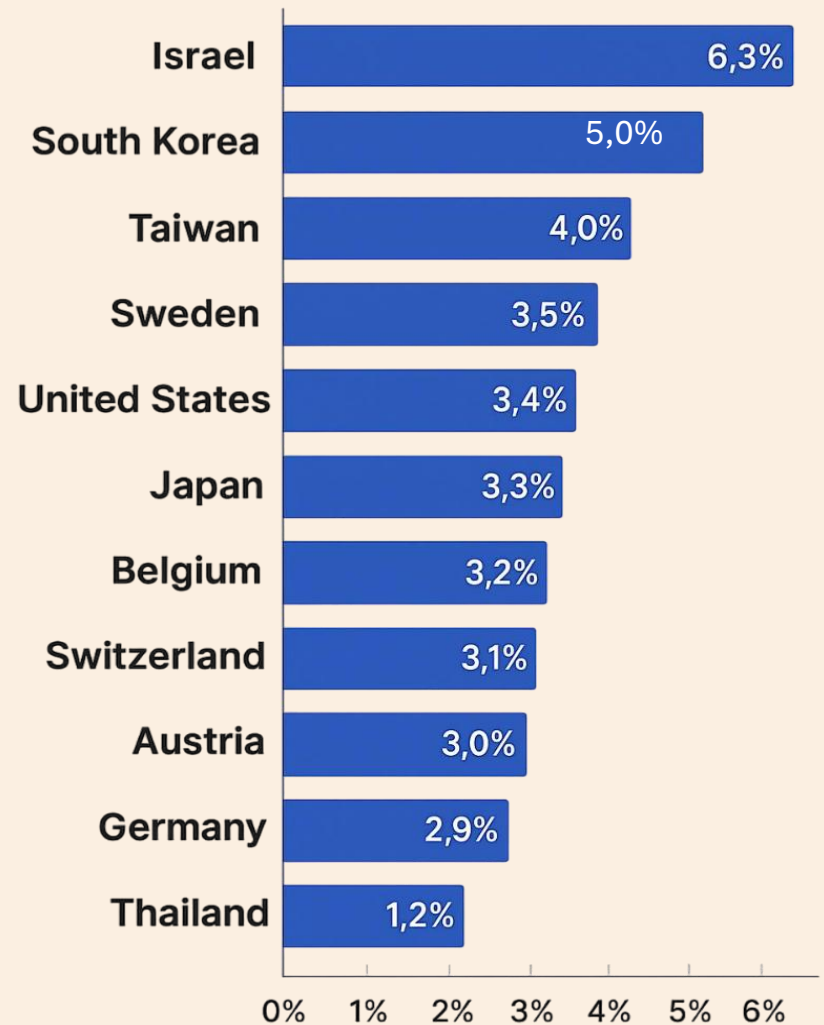
Young scientists may be more agile with new tools, while senior scientists provide critical context and experience



GLOBAL NETWORKING AND COMMUNICATION

Both generations should improve their networking abilities, communication skills, and engagement in global research platforms

**TOP 10 COUNTRIES BY
R&D INTENSITY
(AS A % OF GDP, ~2023)**



International Funding Organizations (IFOs)

Beneficiaries

- Early & Senior Researchers
- Universities & Institutions
- Communities & Stakeholders
- Global Society (UN SDGs)



Benefits

- Financial Resources
- Capacity Building
- Networking & Visibility
- Innovation Transfer
- Policy Impact

**PATHWAY TO
BUILDING
STRONG
NETWORKING**



EMPOWERMENT OF A RESEARCHER



**FROM THE
EMBARKATION
OF HIS INITIATION
TO FUTURE
ACHIEVEMENTS**



THE RESEARCH ENVIRONMENT



should be proudly embraced by
YOUNG SCIENTISTS

Such an environment not only nurtures
curiosity but also enhances the sharing and
expansion of knowledge, fostering
innovation and long-term scientific progress



exploration



meaningful
discussions



interactive
conferences



collaborative
learning

VISION & PATIENCE

Small steps
today create
the
foundations
for tomorrow's
breakthroughs

.



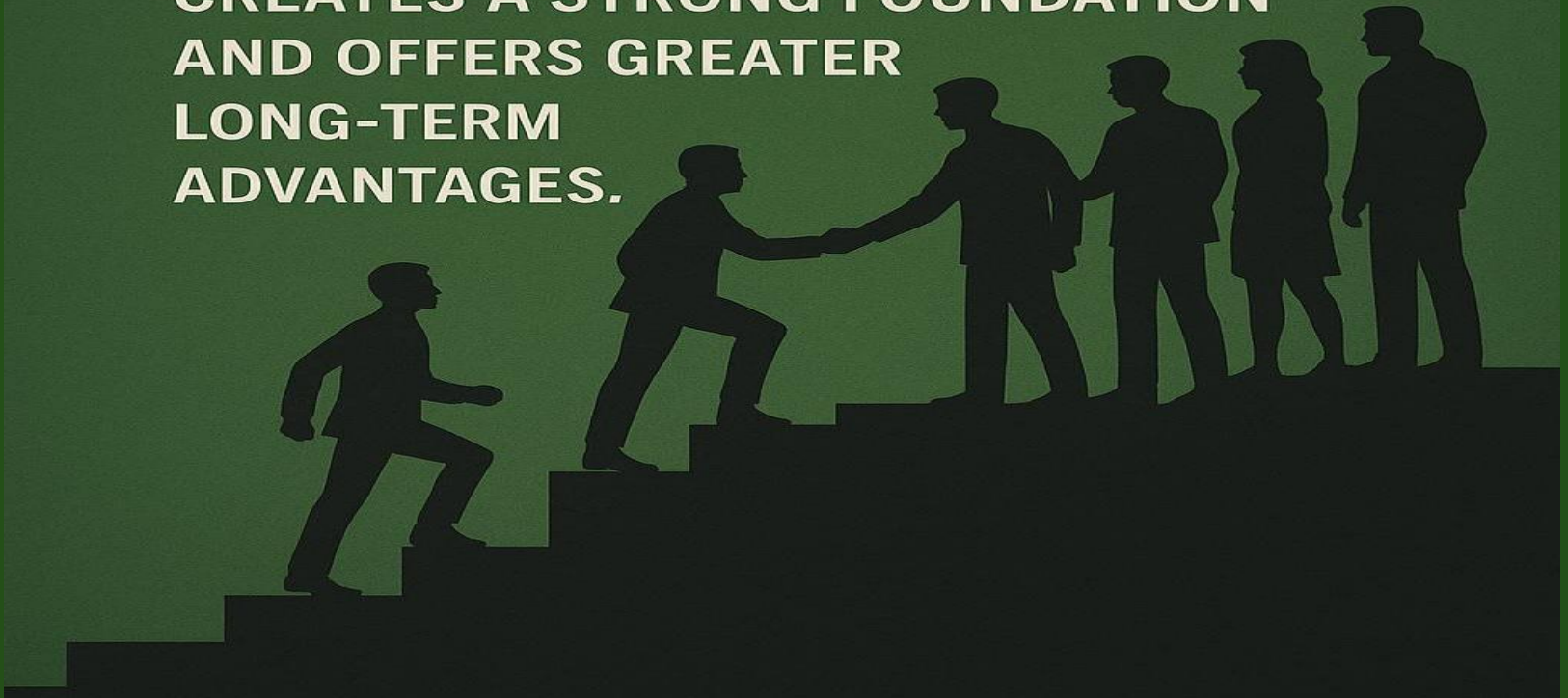
INNOVATION IS BORN FROM PERSISTENCE

Every challenge
faced is a step
toward discovery.



SIGNIFICANT ACHIEVEMENTS TAKE TIME

**EARLY INITIATION, COUPLED WITH
PROACTIVE TEAM RECRUITMENT,
CREATES A STRONG FOUNDATION
AND OFFERS GREATER
LONG-TERM
ADVANTAGES.**



Smart researchers for a **Changing World..**



Empowering the Future
through Vision,
Responsibility, and
Global Commitments



“By aligning their work with the United Nations Sustainable Development Goals (UN-SDGs), they not only advance science but also contribute to global well-being, sustainability, and equitable”



CREATE A LASTING LEGACY

Develop real-world solutions



CREATE TO COMPETITIVE FUNDING

Pursue internally with global priorities



COMMIT TO CONTINUOUS LEARNING

Embrace inter prot approaches



PUBLISH WITH IMPACT

Target high impact journals
Share young scientists



DEVELOP A UNIQUE SCIENTIFIC VISION

Identifying challenges, cultivating research niche



DEVELOP A UNIQUE SCIENTIFIC VISION

Identify big challenges, cultivate research niche

BUILD GLOBAL COLLABORATION & NETWORKS

Engage in international projects and mentor

SECURE COMPETITIVE FUNDING

Pursue interdisciplinary



ASPIRING RESEARCHER

PATHWAY TO BECOMING A WORLD TOP SCIENTIST

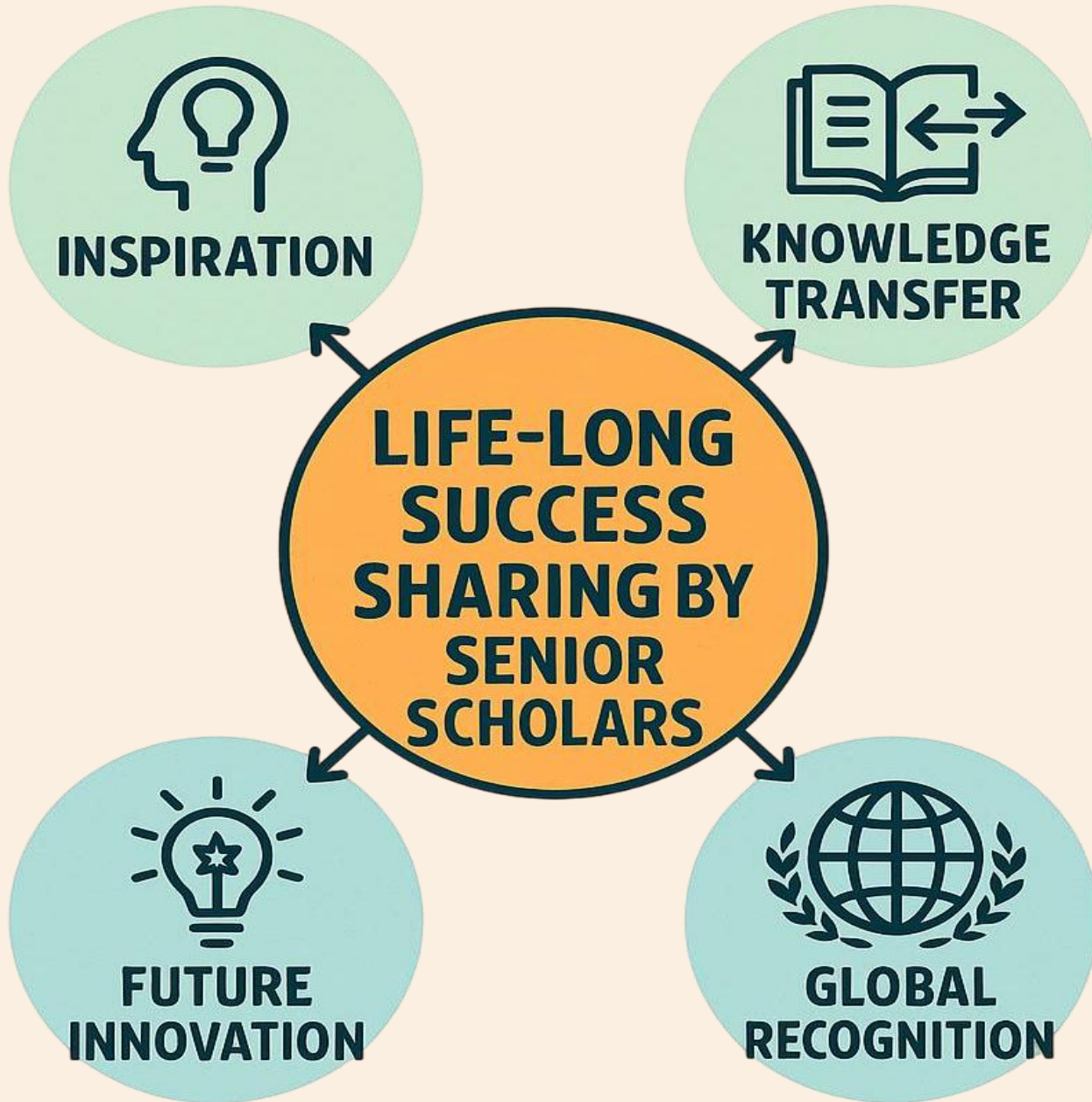
For the global young scientists, early interactive collaboration and strong networking are not just opportunities—they are essential stepping stones to future achievements!

Professor Dr. Metha Wanapat
Khon Kaen University, Thailand

THE POWER OF SHARING LONG-TERM EXPERIENCES



Experienced researchers can guide and empower younger generations through shared knowledge.



O.C.E.A.N. – Smart Future Scientists for the Changing World

OCEAN

Smart Future Scientists for a Changing World



Open-minded

Embracing innovation, diversity, and transformative ideas.



Committed

Devoted to impactful research and achieving global sustainability goals



Engaged

Actively contributing to society through collaboration and outreach



Advancing in Cutting-edge Research

Pushing the frontiers of science and technology to solve future global challenges



Networked

Well-connected in global, interdisciplinary research communities

COLLABORATION & TEAMWORK

Collaboration transforms
individual efforts into collective
achievements that
last a lifetime.



From
NETWORKING
to
NOTEWORTHY
ACHIEVEMENTS
GLOBALLY

A network diagram consisting of approximately 20 small grey circular nodes connected by thin white lines. The nodes are arranged in a somewhat circular pattern with internal connections, creating a web-like structure. The diagram is centered on the green background and partially overlaps the text.

Ladder for potentially successful awarding of INTERNATIONAL RESEARCH PROJECT PITCHING

Professor Dr. Metha Wanapat
Khon Kaen University, Thailand



1

VISIONARY FOUNDATION

- Clear research vision aligned with goal priorities (e.g. SDGs, climate-smart systems)
- Defined goals with long-term and transformative impacts-



2

PROBLEM-BASED ORIENTATION

- Focus on solving pressing global and regional issues
- Relevance to international policy frameworks and donor agendas



3

STRONG NETWORKING & ENGAGEMENTS

- Development of robust national and international research networks
- Active engagement in global scientific communities, donor roundtables, and policy dialogues
- Collaboration with NGOs, international research centers, and private-sector



4

CAPACITY & PROVEN TRACK RECORD

- Strong research profile supported by publications, innovations, H-index, and mentorship
- Evidence of previous successful project management and donor collaboration



5

PROPOSAL STRUCTURING

- Clear objectives, work packages, and defined responsibilities
- Inclusion of Gantt charts, risk analysis, and M&E framework
- Emphasis on cost-effectiveness and impact-driven budgeting



6

INNOVATION & SOCIETAL IMPACT

- Integration of cutting-edge science and local knowledge
- Potential for scaling innovations across regions and disciplines
- Direct contributions to livelihoods, food security, and sustainability



7

COMMUNICATION & PRESENTATION

- Strong proposal writing, and effective pitching strategies
- Use of visual tools, infographics, and storytelling techniques



INTERNATIONAL DONORS AND ORGANIZATIONS SUPPORTING R&D IN FOOD SECURITY, SUSTAINABILITY, CLIMATE CHANGE & LIVELIHOODS



Consultative Group
on International
Agricultural Research



FAO



International Fund for
for Agricultural
Development



EU
European Union



THE WORLD BANK



WORLD
RESOURCES
INSTITUTE

BILL & MELINDA
GATES *foundti.*



GREEN
CLIMATE
FUND



USAID
FROM THE AMERICAN PEOPLE

BMGF



Australian Centre for International
Agricultural Research

“Global Research Projects PITCHERS”



P

Problem-driven

Tackle pressing-global or regional challenges with scientific clarity.



Innovation-focused

Present creative, forward-thinking, and adaptable solutions.



Targeted Objectives

Ensure well-defined, measurable, and strategic research goals.



Collaborative Networks

Engage with both national and international stakeholders and



High-Impact Outcomes

Deliver results that benefit society, policy, and the environment.



Evidence-based

Base your ideas on solid data, prior research, and realistic projections.



Resource Optimization

Maximize the value of funding, human capital, and time with sustainability in mind.



Steadfast Commitment

Show diligence, continuity, and a strong sense of responsibility throughout the research journey

International Funding Organizations Donor's Lens

1 Strategic Relevance

- Alignment with global priorities (e.g, UN-SDGs, climate resilience, food security)
- Fit with the funding organization's mission and thematic focus areas



2 Scientific Excellence & Innovation

- Clear research questions with strong theoretical or evidence-based grounding
- Novelty – new approaches, methodologies, or technologies
- Feasibility supported by preliminary data or pilot results
- Robust, transparent methodology and risk management plan



3 Clear Outputs, Outcomes, and Impacts

- Well-defined deliverables (publications, datasets, tools, policy briefs)
- Pathway to practical application (how results will be used)
- Anticipated long-term benefits – social, environmental, economic



4 Strong Research Team & Partnerships

- Expertise and track record of Principal investigator and core team
- Interdisciplinary and cross-sector collaboration
- Inclusion of local institutions and capacity building
- Commitment to gender balance and diversity



5 Stakeholder Engagement

- Early involvement of end-users, policymakers, and community representatives
- Plans for knowledge co-creation and participatory approaches
- Strategies for scaling and sustaining adoption

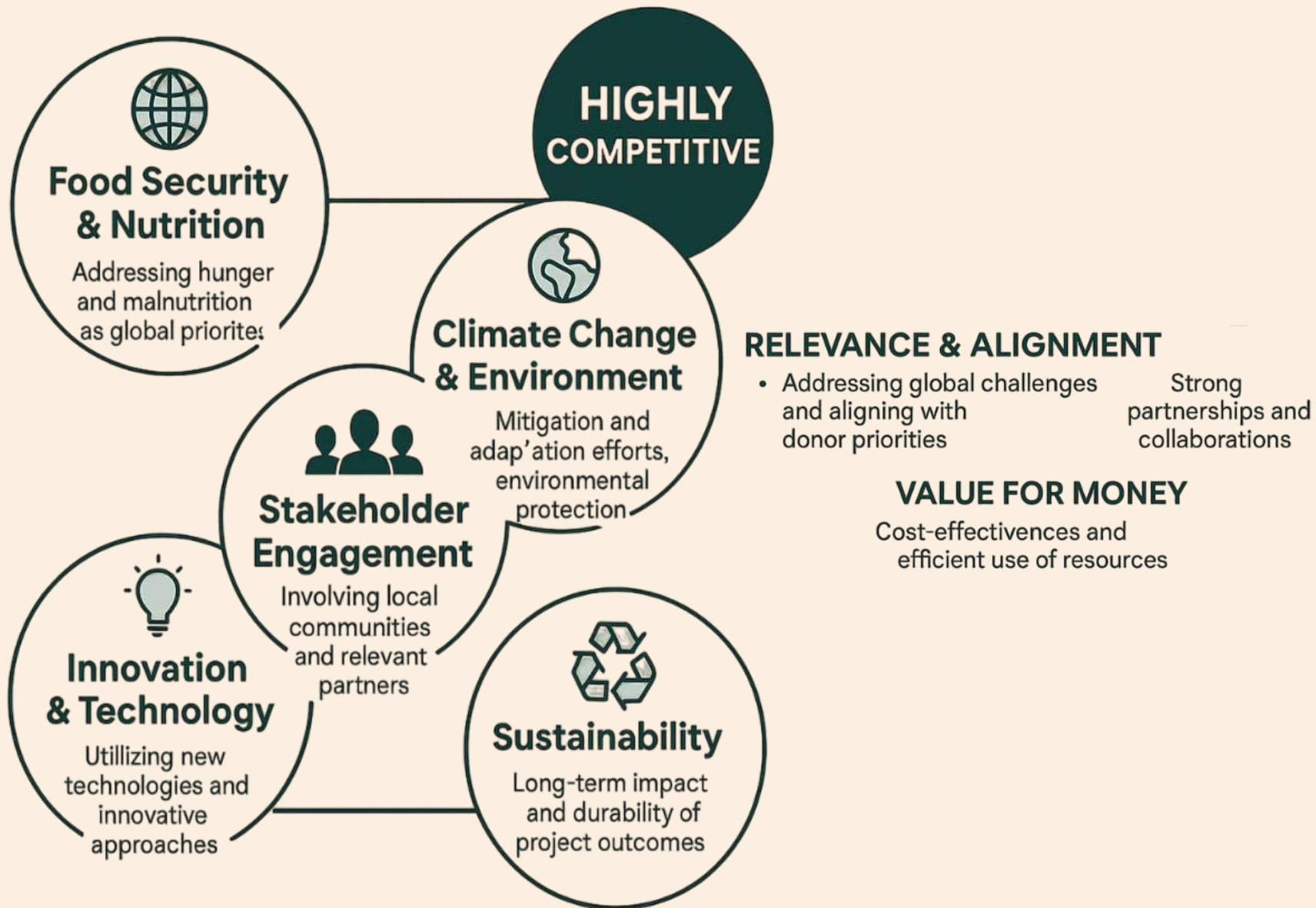


6 Risk Assessment & Management

- Identification of potential scientific, logistical, or political risks
- Contingency plans for unexpected challenges
- Ethical considerations and compliance with international standards



INTERNATIONAL PROJECT FUNDING



Sustainability & Stakeholder Impacts in Internationally Funded Projects

**Key Focus for International
Funding Organizations**



GLOBAL IMPACT REQUIRES SUSTAINABILITY



Long-term solutions benefit future generations.

SUSTAINABILITY OF THE PROJECT AFTER COMPLETION



1 INSTITUTIONAL
CAPACITY BUILDING



2 FINANCIAL
CONTINUITY



3 POLICY
INTEGRATION



4 COMMUNITY
OWNERSHIP &
ENGAGEMENT



5 SCALABILITY
& REPLICABILITY



6 ENVIRONMENTAL
& SOCIAL RESILIENCE



7 MONITORING &
KNOWLEDGE
SHARING

IMPACT ON STAKEHOLDERS: Focal Point



SUSTAINABILITY OF THE PROJECT AFTER COMPLETION

- Institutional capacity building
 - Financial continuity
 - Policy integration
- Community ownership & engagement
 - Scalability & replicability
- Environmental & social resilience
- Monitoring & knowledge sharing

Problem-Based Innovation: Aligning Research for 2050

Food Security, Sustainability and well-being

To foster innovations that directly address real-world problems, specifically:

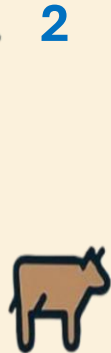
- Global food insecurity
- Climate change challenges
- Unsustainable resource use
- Feeding 9,7 billion people by 2050

8 Strategic Themes for 2050-Oriented Innovation



1 CLIMATE-SMART AGRICULTURE

Adapt agriculture to climate variability and mitigate its impact



2 LIVESTOCK & ANIMAL SCIENCE SOLUTIONS

Increase sustainable productivity of animal agriculture



5 POLICY, EQUITY & GLOBAL COLLABORATION

Create inclusive systems and supportive environments for innovation



6 SUSTAINABLE FOOD SYSTEMS & CIRCULAR ECONOMY

Design food systems that regenerate, not deplete, natural resources



3 YOUTH-DRIVEN RESEARCH & INNOVATION

Empower the next generation to solve tomorrow's challenges



4 TECH & DIGITAL TOOLS FOR SUSTAINABILITY

Leverage technology for smarter, greener food production



7 INTEGRATIVE NUTRITIONAL SCIENCE & FOOD INNOVATION

Innovate foods to meet nutritional needs and preferences



8 PROBLEM-BASED LEARNING & ADAPTIVE EDUCATION

Redesign education systems to train solution-oriented thinkers

TEAM LEADER COMPETENCIES	DONOR EXPECTATIONS
Credibility & Trust	Track record & networks
Leadership in a Multinational Context	Cross-cultural coordination
Technical & Strategic Vision	Expertise & global alignment
Communication with Donors	Professional reporting
Risk Management	Contingency planning



IFS: INTERNATIONAL FOUNDATION FOR SCIENCE

SUPPORTING YOUNG SCIENTISTS IN DEVELOPING COUNTRIES



**RESEARCH
GRANTS**



TRAINING



NETWORKING

SUMMARY OF ACIAR RESEARCH

THEMATIC FOCUS	EXAMPLE PROJECTS
Agribusiness & Inclusive Value Chains	Commercial beef supply chain integration (Vietnam)
Food Systems Transformation	Eastern Gangetic Plains food diversification system
Nutrition & Market Systems	Pangasius catfish, beekeeping, shallot–chilli–rice cropping
Pest & Disease Management	TR4 Panama disease, fall armyworm, honeybee pests
Fisheries & Aquatic Systems	Forest biosecurity–fisheries projects in Asia–Pacific
Value Chain Development	Cocoa, coffee, goat systems, fruit for climate adaptation
Livestock Genetics & Breeding	ACIAR Project 9423 (Australian Yorkshire pigs in Vietnam)

Source: ACIAR

SUGGESTED PROJECTS FOR LMCSF FUNDING



AGRICULTURE & FOOD SECURITY

- Sustainable Aquaculture & Feed Innovation
- Cross-border Livestock Disease Early Warning System



CLIMATE CHANGE ADAPTATION & WATER RESOURCES

- Climate-smart Rice & Crop Intensification
- Mekong Basin Drought & Flood Forecasting Hub



TECHNOLOGY, INNOVATION & TRADE

- Agri-Digital Marketplace for Mekong MSMEs
- Smart Cold Chain for Perishable Goods



SOCIAL INCLUSION & CAPACITY BUILDING

- Women in Mekong Agribusiness Leadership Program
- Mekong Youth Tech for Agriculture Challenge
- Methane Mitigation & Climate-smart Livestock Production



HEALTH & ONE HEALTH INITIATIVES

- One Health Surveillance Network for Zoonotic Diseases
- Safe Food from Farm to Table



Lancang-Mekong Cooperation Special Fund Project Proposal Preparation

1

Understand the LMC Priorities

Align with LMC's focus: Water, Agriculture, Environment, Connectivity, Health, Education, etc. Refer to national focal points or ministries



5

Build a Clear Budget

Follow LMC cost categories
Ensure transparency & accountability



6

Submit through Official Channels

Submit to national focal agency
respect deadlines and formalisms

3

Engage Key Partners Early

Include The, Include:

- Background & Rationale
- Objectives & Expected Outputs
- Activities & Work Plan
- Budget with justification
- Monitoring & Evaluation (M&E)
- Sustainability & Risk Analysis



7

Ready for Implementation

- Set up team, partners, M&E tools
- Ensure focus on results and deliverables
- Coordinate with stakeholders for smooth execution
- Monitor progress and adapt as needed

4

Prepare Project Timeline

Create a detailed Gantt Chart
Define milestones and accountability



LANCANG-MEKONG COOPERATION SPECIAL FUND PROJECTS



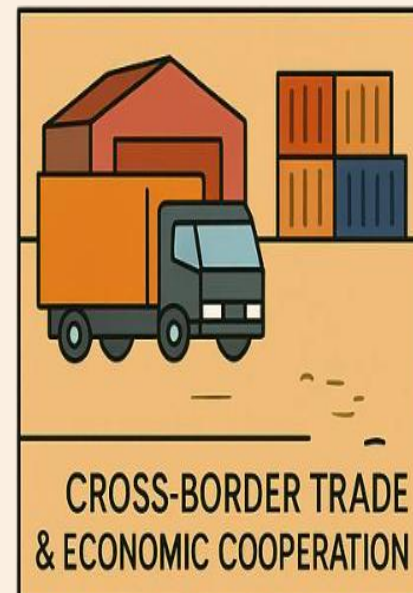
**CASSAVA VALUE
CHAIN CAPACITY
BUILDING**



**MEKONGDNA:
RIVER WATER
QUALITY MONITORING**



**WATER-SECTOR
YOUTH LEADERSHIP &
CLIMATE-SMART
RICE FARMING**



**CROSS-BORDER TRADE
& ECONOMIC COOPERATION**



**MINE
ACTION
(CAMBODIA)**

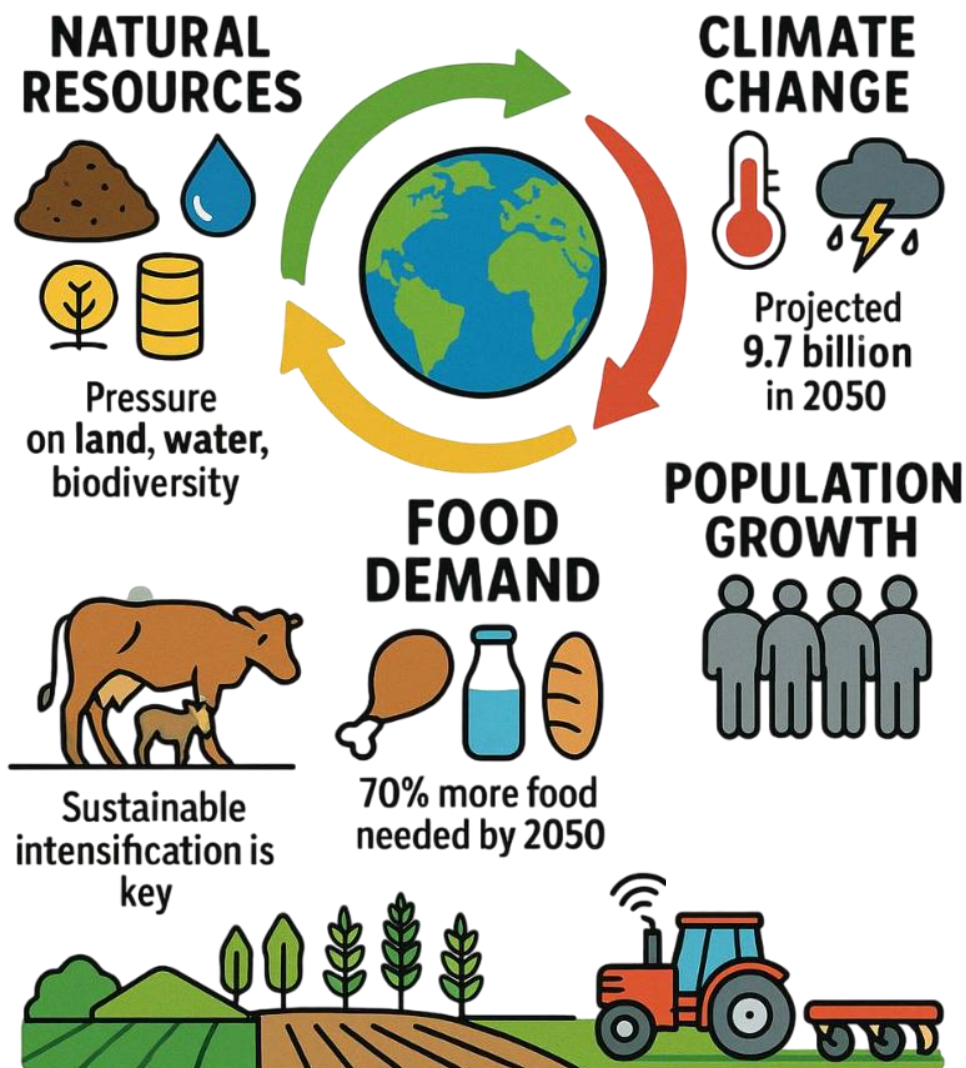


FEEDING THE FUTURE

CHALLENGES AND INTERCONNECTIONS to 2050

“Think Globally & Act Locally, it is the way forward..!!!”

Prof. Dr. Metha Wanapat



Increasing impacts of climate change on agricultural practices



CLIMATE CHANGE

- Rising temperature
- Erratic rainfall
- Extreme weather



AGRICULTURAL IMPACTS

- Crop failure
- Reduced livestock productivity
- Soil degradation



SOCIO-ECONOMIC CONSEQUENCES

- Food insecurity
- Migration
- Poverty





Strategic Steps for Preparing a Research Proposal for International Donors

STEP 1

Problem Identification & Alignment



1

Identify Real-World Problems

Ground your research in empirical evidence and demonstrable need. Clearly articulate the gap your research seeks to address.

2

Align with Global Priorities

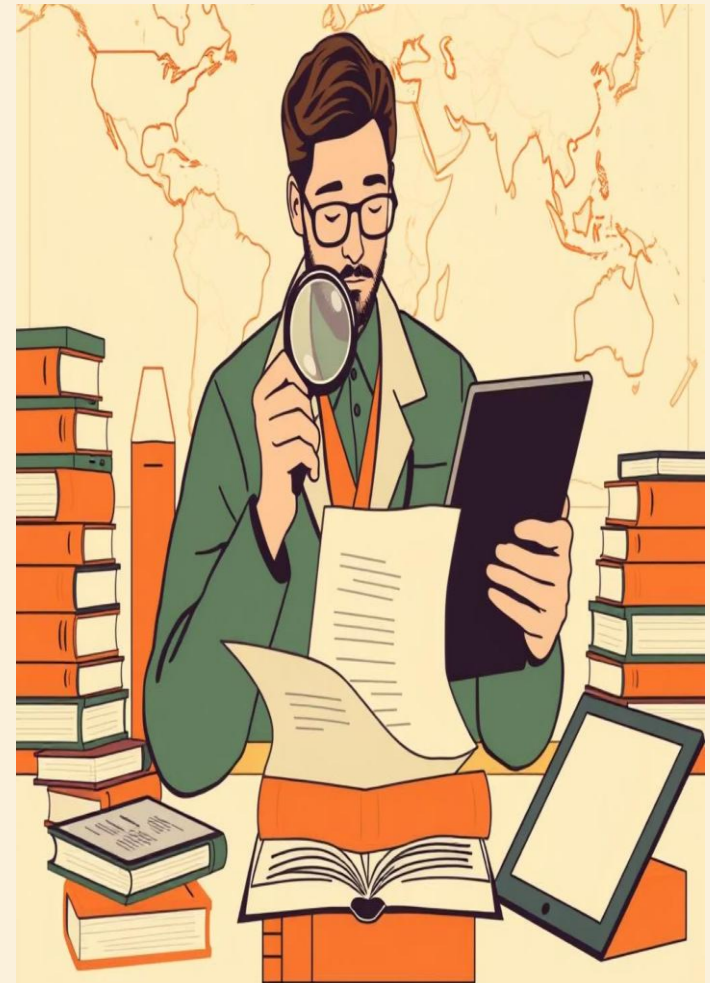
Ensure your proposal directly supports Sustainable Development Goals (SDGs), donor strategic missions, and national development agendas.

STEP 2

Situation Analysis & Literature Review

A comprehensive understanding of the existing landscape is crucial. This involves:

- Conducting a thorough SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis to identify internal and external factors.
- Performing detailed needs assessments to quantify the problem's scope and impact.
- Reviewing relevant academic literature and prior projects to understand successes, failures, and unique regional contexts.



STEP 3

Formation & Partnerships



Multidisciplinary & Inclusive Teams

Assemble a diverse team with expertise spanning relevant fields, ensuring gender balance and representation from local communities.



Strategic Collaborations

Forge strong partnerships with academic institutions, non-governmental organizations (NGOs), private sector entities, and international bodies to enhance reach and impact.

STEP 4

Objectives, Questions & Methodology

SMART Objectives

Develop Specific, Measurable, Achievable, Relevant, and Time-bound objectives that clearly define what your research will accomplish.

Testable Questions

Formulate precise, answerable research questions that guide your investigation and directly address the identified problem.

Rigorous Methodology

Select appropriate research methods that are scientifically sound, ethically robust, and feasible within the project's scope. Justify your choices.

Work Plan, Logical Framework & Gantt Chart

01

Structured Work Packages

Break down the project into distinct work packages, defining clear milestones and deliverables for each phase.

02

Theory of Change/LogFrame

Utilize a Theory of Change or Logical Framework to illustrate the causal pathways from inputs to desired outcomes and impact.

03

Gantt Chart for Clarity

Present a detailed Gantt chart to visually represent the project timeline, showing activity durations, dependencies, and critical path.

Budget & MEL (Monitoring, Evaluation & Learning)

Detailed, Justified Budget

Prepare a comprehensive budget that aligns with donor formats, providing clear justifications for all expenditures. Include personnel, equipment, travel, and indirect costs.



Robust MEL Framework

Develop a robust Monitoring, Evaluation, and Learning (MEL) plan. Define clear indicators, establish baselines, and outline methods for data collection and analysis to track progress and facilitate adaptive management.



STEP 7

Stakeholder Relevance & Policy Linkages



Identify and map all relevant stakeholders, including beneficiaries, local authorities, and community leaders. Develop a clear plan for their meaningful engagement throughout the project lifecycle.

Ensure the research design and expected outcomes directly address the needs and priorities of the target communities, fostering ownership and sustainability.

Articulate clear strategies for how your research findings will inform policy development and decision-making at local, national, and international levels.

Proposal Packaging, Review & Submission

- **Adhere to Donor Guidelines:** Meticulously follow all donor-specific formatting and content requirements, including executive summary, detailed methodology, MEL framework, and budget.
- **Internal Review Process:** Conduct rigorous internal reviews by colleagues and external experts to identify weaknesses and refine the proposal before submission.
- **Preparation for Follow-Up:** Anticipate potential requests for clarification or interviews, and prepare concise responses and presentation materials.

STEP 9

Post-Award Execution & Knowledge Sharing

The journey doesn't end with funding. Successful execution and dissemination are paramount:

Project Implementation & Reporting

Mobilize your team promptly and implement the project according to the approved plan, ensuring timely and accurate reporting to the donor.

Final Evaluation & Dissemination

Conduct a comprehensive final evaluation to assess impact. Share results through academic publications, policy briefs, workshops, and strategies for scaling successful interventions.

TAKE-HOME MESSAGES: INTERNATIONAL RESEARCH PROJECT FUNDING PITCHING

Core message:

✓ A winning pitch combines donor priorities, strong partnerships, clear impacts, and a realistic, scalable plan with high accountability.



Problem & Donor Alignment

Identify a clear problem supported by data. Show alignment with donor mandates, UN-SDGs, or specific funding win.



Clear Outcomes & Impact

Showcase national/community demand and government or stakeholders buy in. Highlight how the project benefits local livelihoods and sustainability



Innovation with Practical Application

Showcase what's novel in your approach. Link to policy, sustainability, or action paths



Strong Consortium & Leaders

Present a credible team with complementary expertise. Highlight prior successes and strong institutional capacity



Pathways to Uptake

Identify concrete partners for policy, extension, or market integration. Explain how project outputs will transition into long-term adaptation



Monitoring, Evaluation & Auditability

Practice a risk register with mitigating measures. Ensure transparent governance, ethics, and safeguards

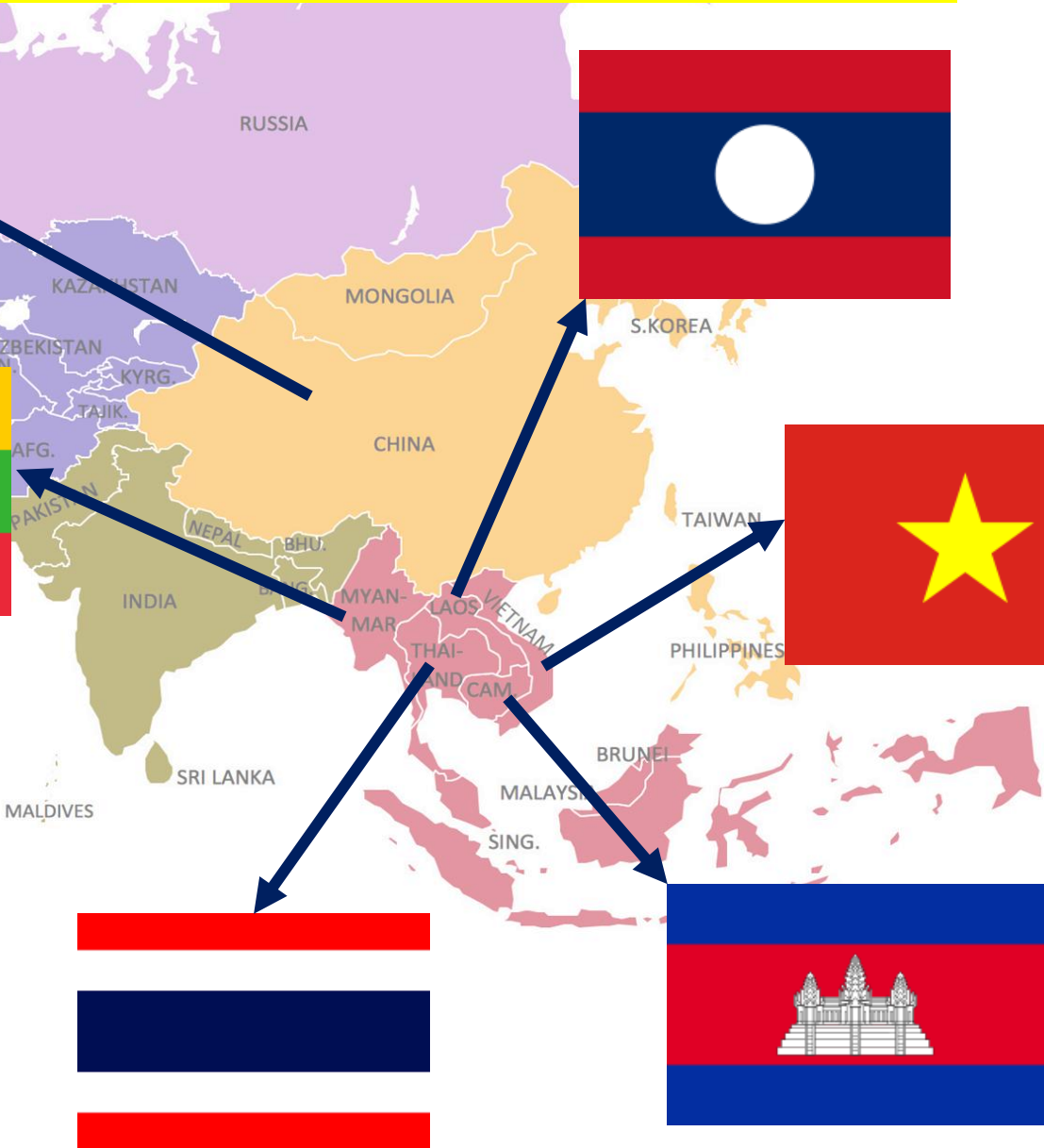


Value for Money

Present a transparent, cost-effective budget



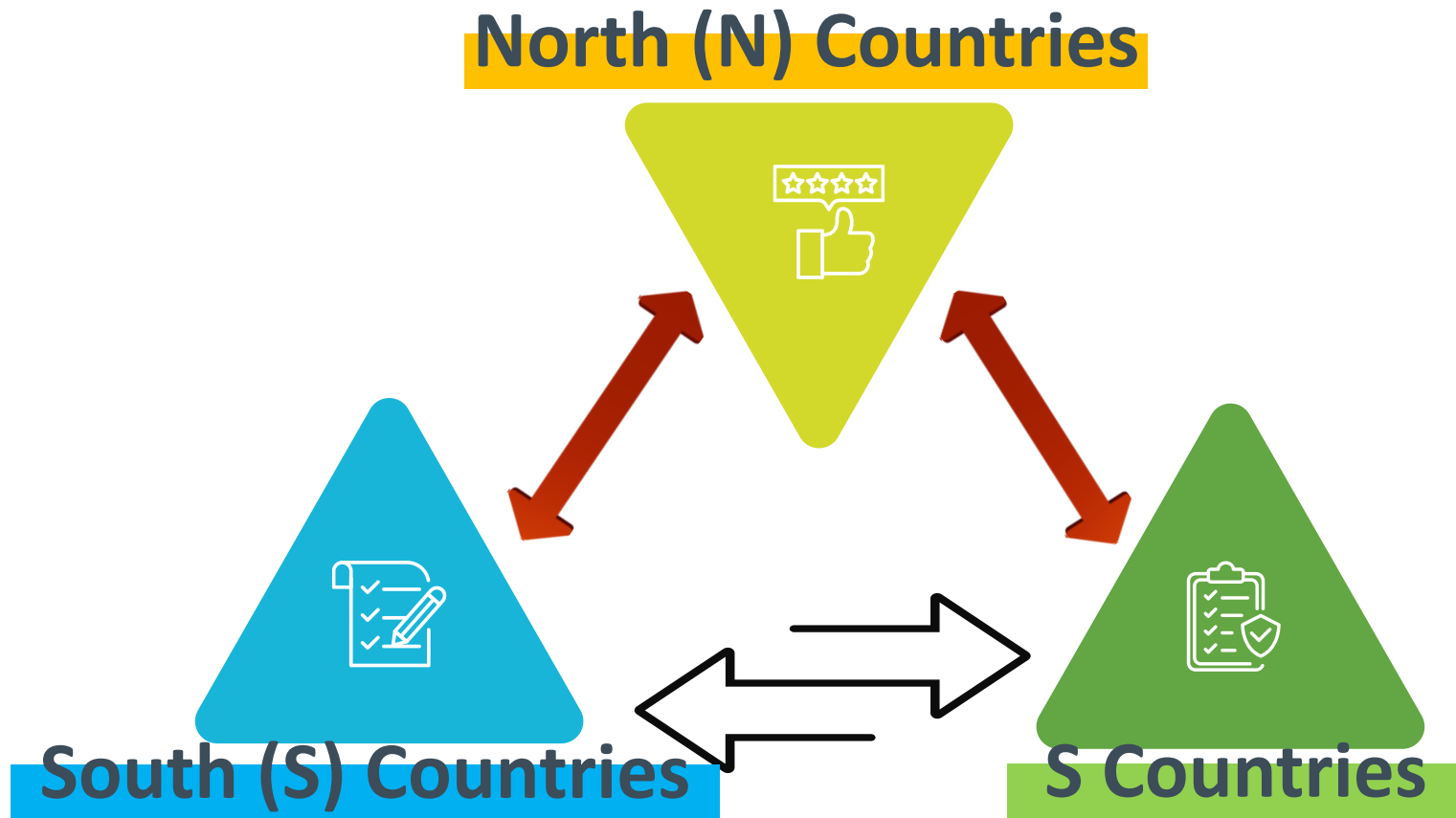
Lancang-Mekong Countries





“3+5+X Cooperation Framework”

Opportunities & Challenges for Research Collaborations/Institutes



Special characteristics one should hold for LMCSF ...



#Do you wish to share, support, promote, empower others for the betterment..

#Are you agile and energetic to move forward..



#Have you been engaging in research and highly enthusiastic..

#Do you enjoy travelling esp. international.. willing to meet people, learn different culture, food..

#Are you willing to interact with others more widely..



Potential components enhancing the LMCSF Project Awarding



I.
Researchers

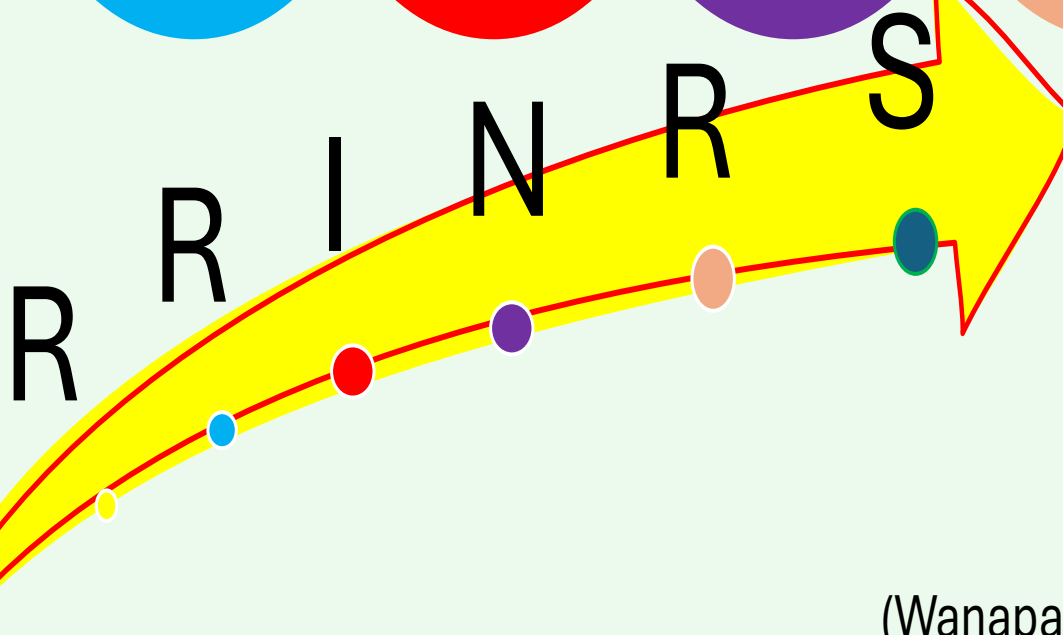
II.
Research

III.
Impacts

IV.
Net-working

V.
Resources

VI.
Sustainability



(RRINRS)



(Wanapat, M., 2025; KKU)

How to be successful?



Fig. Structure characteristics for global R & D funding scaling-up

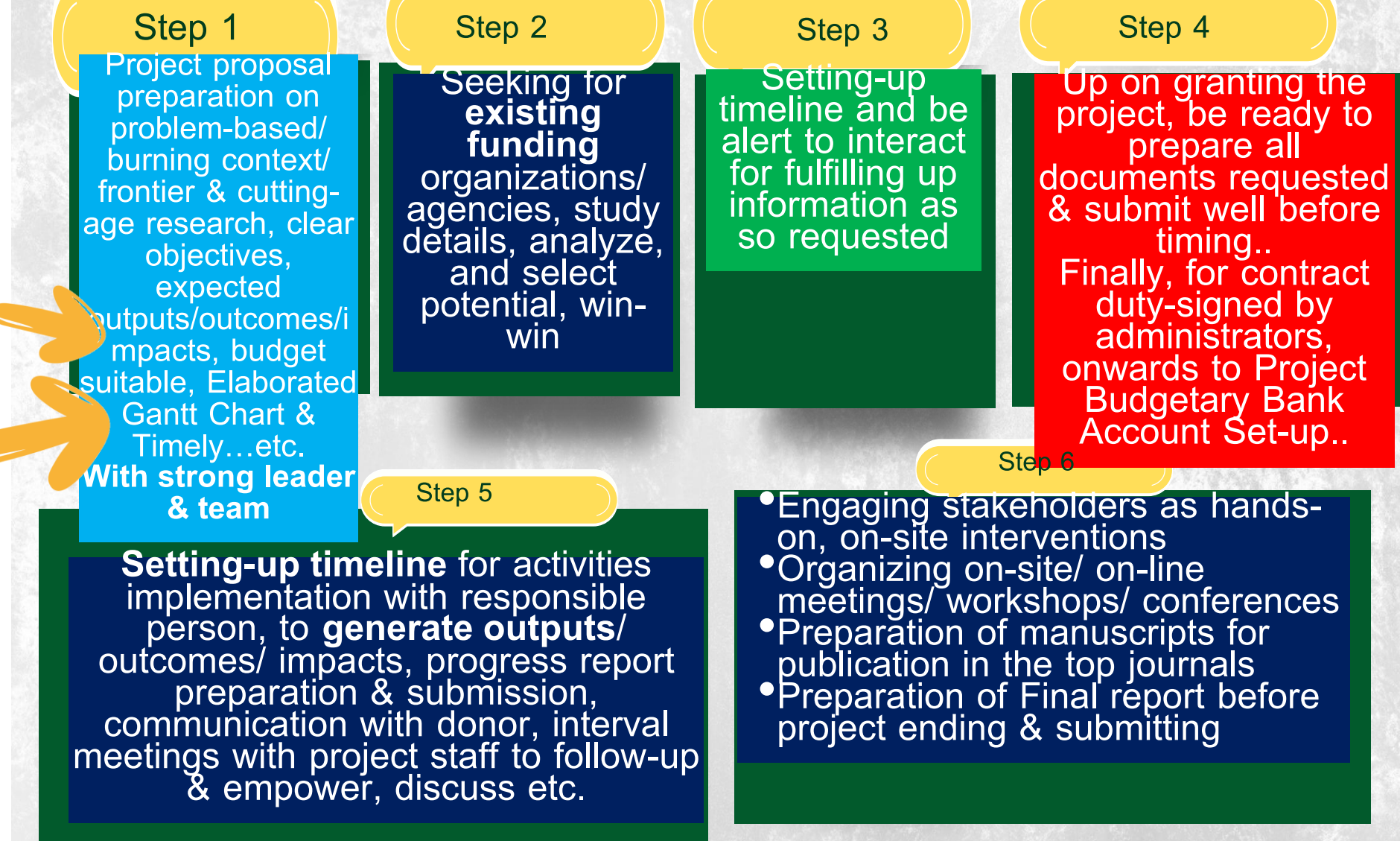


Fig. Time-line for project implementation..

Careful steps for successful project execution;



Disseminate the project results/ findings via exhibitions, meetings, seminars, workshops, conferences and publications..

Responsible on project progress and final reports on timeline



Organize meetings/workshops/farms to interact, disseminate & empower the failures

Responsive with Main Project CEO & empowerment

Manage the operational task on budget transparently and effectively

Follow up all activities to monitor any achievements and/or failures to correct

Perform on the ground with partners & stakeholders

Conduct sequential project activities

Well prepared for the kick-off, following the Gantt Chart



Project characteristics;



- Project call/announcement; short duration/fast-turnaround ($\approx$ 8-12 days in June)

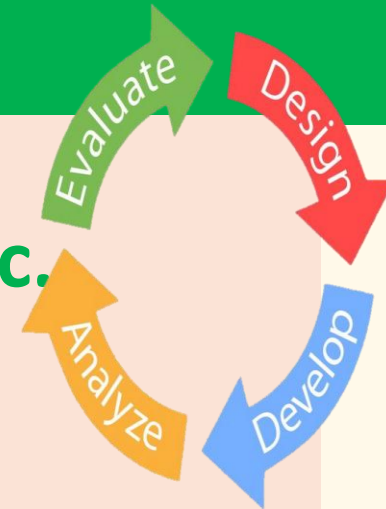


- Research, R & D, Knowledge & Technology Transfer, Collaborations & Net-working platforms (Open & diversified in 4 types)

Project characteristics;



- **Type 1:** Training Workshop/ Conference, Exchanges, Visits..R&D etc.
- **Type 2:** Research
- **Type 3:** Technology application
- **Type 4:** Practical cooperation e.g. materials & equipment, resources development etc.
- Selection of Type based on the researchers' background & experiences



Project characteristics;

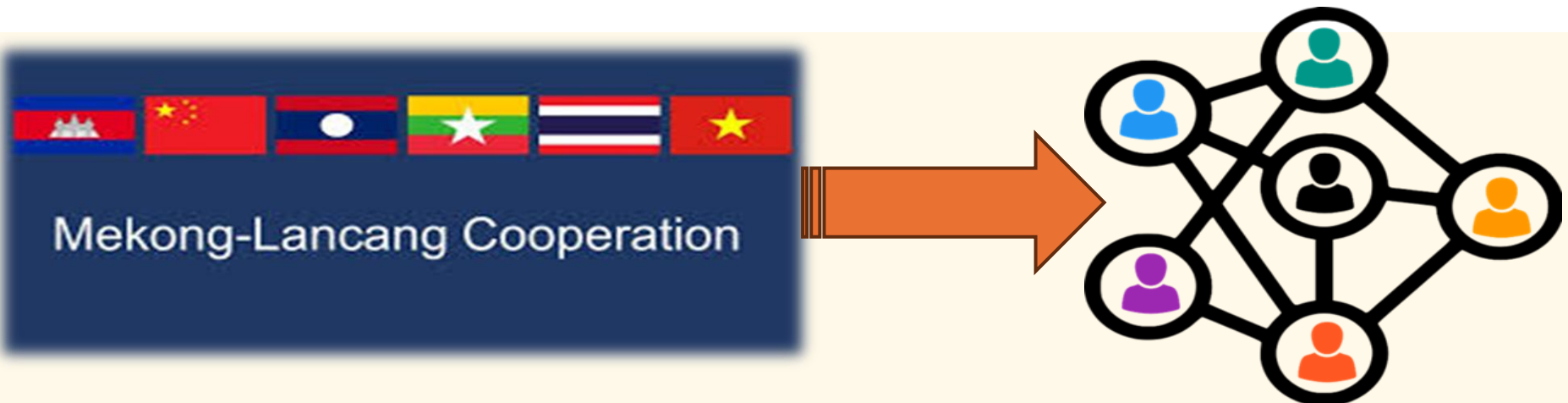


- Current/burning issues, data on-hands.. are greatly important
- Sharing common problems, mutual usefulness/benefits
- Connections and Net-working platforms are profoundly important & relevant



Collaborators/Partners joining the project;

- Utmost important to recruit both national and international team members from LMC (6 countries, at least 2, the best should be at least 3)



Collaborators/Partners joining the project;

- From Universities Institutions, Ministries, NGOs etc.
- Who should be invited; Research peers, former students; Recommended by Experts, or by Direct invitation to respective Universities/Organizations etc.



Budgetary; flexible ceiling

- Closely related to time frame, activities, researchers, and budget category, **budget/head**, etc.
- e.g. a **1-year** project could be from **50,000 \$US** up, or a **2-3-year** project from **100,000 to 500,000 \$US** or more



Budget coverage;



- Small equipment
- Travels, national & international
- Accommodation/Hotel
- Food & breaks
- Facility renting/Workshop
- Office supply
- Materials/ supplies; chemicals, agricultural..consumable..
- Renting of vehicle/equipment
- Per diem/head/Day....Translation hiring..etc.
- Contingency (10%)



Important issues/hints

- To organize/implement activities-set firmly and continuously..
- Collect and make recordings of pictures , VDO, interviews, news, TV etc.





Requirement of project reports;

- Every 3-month interval report with full details following the report outline
- Be straight on time, the early the better!
- Be completed with information, data, as well attachments of documents, pictures and VDO..
- Budget balance clearance must be cleared against the original-set
- Estimated budget requirement for the next 3-month presentation

LMCSF Projects



For all projects to take closer look;

1. **Title**, should be short, succinct, attractive
2. **Objectives**, should be 2-3 points
3. **Current problems**, should be longer 1-3 pages
4. **Brief description**, clearly presented for clarification, well-covered
5. **Project history**, how it is developed, planned, activities to be implemented
6. **Beneficiaries**, who and how it will be impacted, beneficial...across partners
7. **Indicative work plan or Gantt chart**, clearly presented by item with timing
8. **Budget**, appropriately estimated, well related to activities...small equip
9. **Brief CV** (about 1-2 pages/each)
10. **Letter of intention/agreement** of all partners/collaborators
11. **List of partners/collaborators**, should be listed by **Country/Institution** with position, affiliation, full address,.. phone, email, etc.



Recycling of agricultural biomass and fodder shrubs for beef cattle production (RABIF-BeefC Project) (2022-25)

by

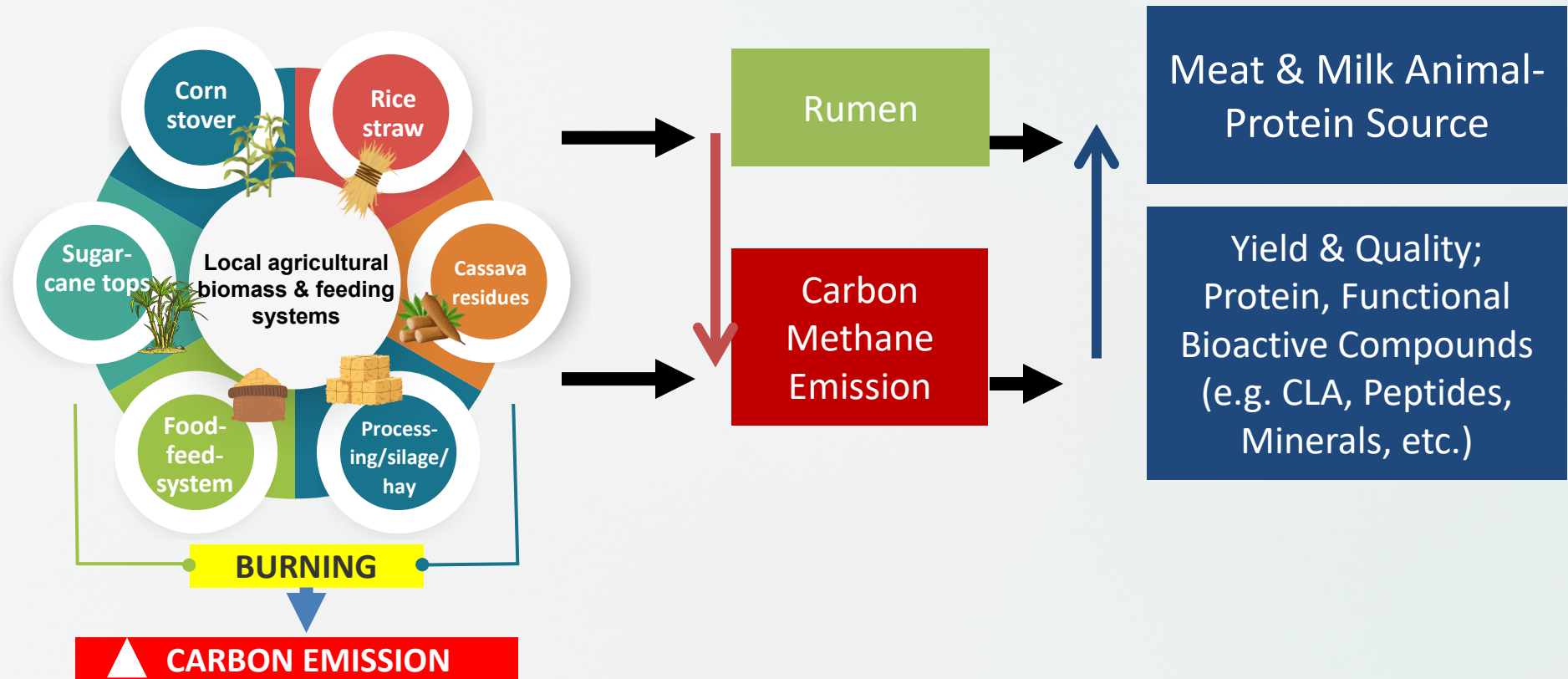
Professor Dr. Metha Wanapat

**LMC Members: Cambodia, China, Laos,
Vietnam and Thailand**

TROFREC, Khon Kaen University, Thailand

Email: metha@kku.ac.th

Hypothesis: Low-carbon livestock production (LOW – C – Livestock)



Researchers Training on Modern Lab. Techniques

Lab. & farm Improvement



Phytonutrient pellet;MABALE

INGREDIENTS MABALE PELLET



50%
MANGOSTEEN
PEEL



33%
BANANA
FLOWER



10%
LEMONGRASS



2%



5%





Global Dimensions



**Food security & Sustainability,
Environmentally-friendly and Livelihoods**

Objectives;



- To organize seminars/workshops/on-farms to LMC stakeholders on innovations of agricultural biomass (AB) and fodders for beef cattle production efficiency while mitigate methane emission
- To empower young researchers on cutting-edge research of rumen microbiomes, fermentation end-products, feeds and animal-based protein products quantity and quality analyses
- To upskill hands-on experiences on-farms for researchers, students, extension officers and farmers of urea-lime treatment of rice straw (U-Lime TRS) for beef cattle
- To exchange ideas and experiences among LMC members by cross-visits

RABIF-BeefC Project:

- ❖ Collaborations among **5 LMC**;
 - ❖ Cambodia (CD)
 - ❖ PR. China (CN)
 - ❖ Lao, PDR. (LA)
 - ❖ Vietnam (VN)
 - ❖ Thailand (TH; Main)
- ❖ Institutes/Organizations **(14)**
 - ❖ CD (1)
 - ❖ CN (2)
 - ❖ LA (3)
 - ❖ VN (2)
 - ❖ TH (6)



Climate change

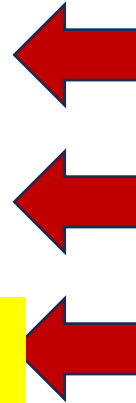
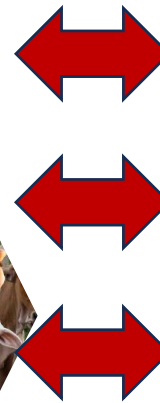


Farmers & livestock

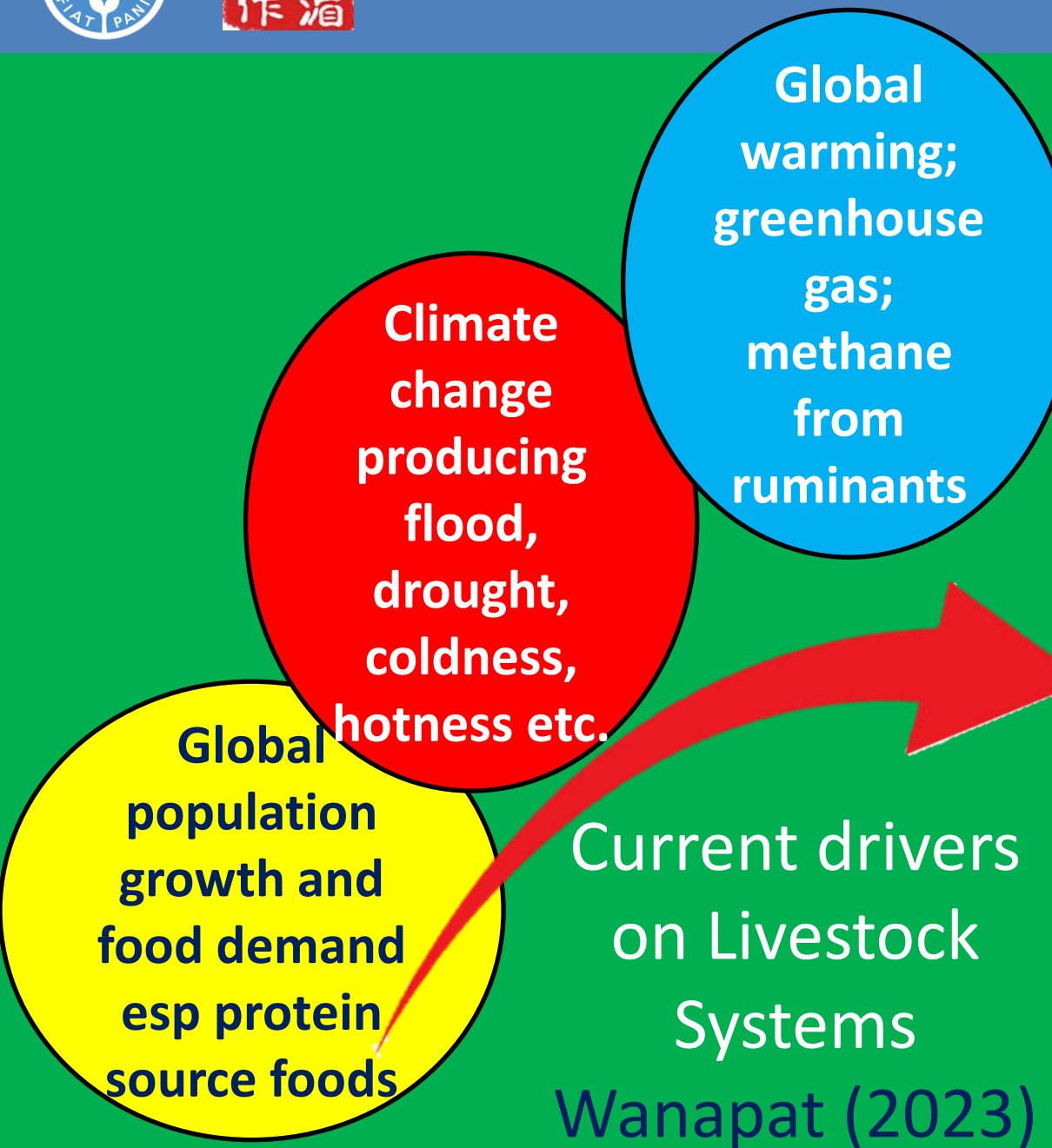


Well-beings & Livelihood

Impacts on Food Security & Sustainability







***Remarkably influence on the Livestock production systems and the engaged stakeholders on production both yield & quality**

***Appropriate technologies, resources and interventions should be consequently implemented on the ground**



มหาวิทยาลัยขอนแก่น
Khon Kaen University

Outlook for efficient ruminant production

Feed resources:

- Grasses, legumes, fodders
- Crop residues
- Agro-industrial by products
- Biofuel co-products
- Etc.

Feed processing:

- Physical
- Chemical
- Biological
- Etc.

Outlook for efficient ruminant production



Precision/Smart
Animal Production

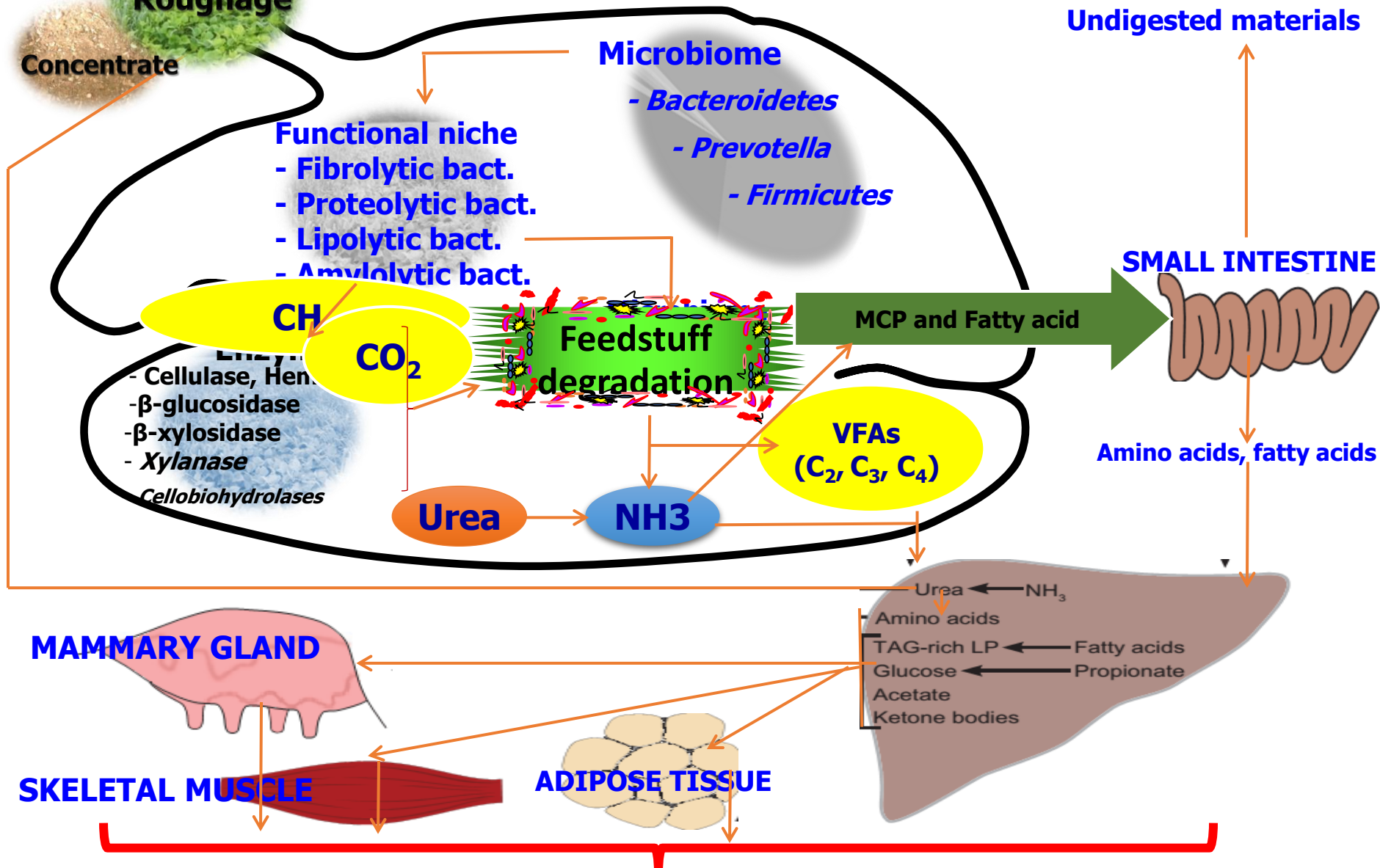
Feeding systems:

- Grazing
- Feedlotting
- Separate feeding
- Total mixed ration
- Strategic supplementation (rumen enhancers)
- Food-Feed-System
- Etc.

Source: Wanapat et al. (2018)

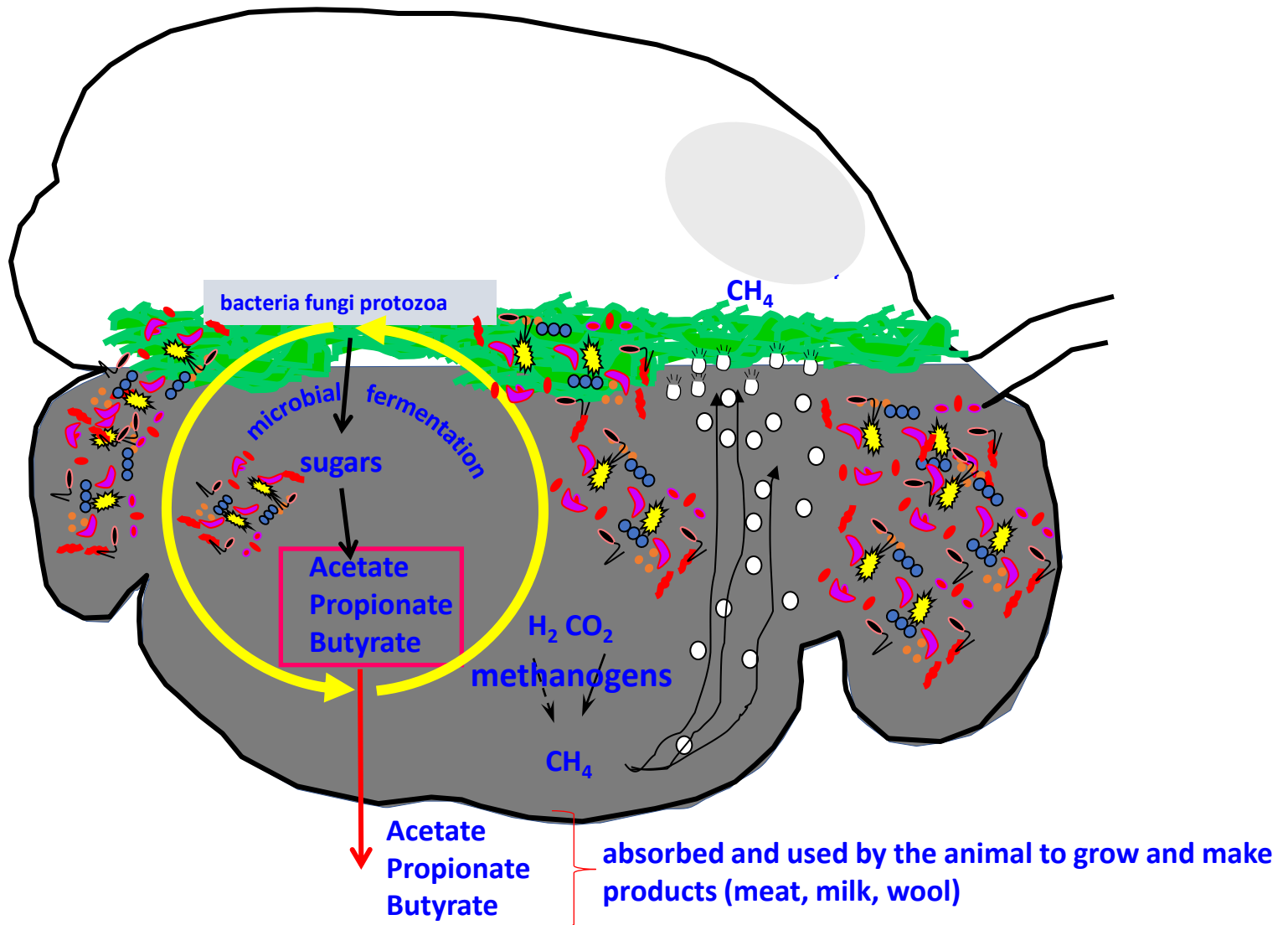


Nutrition, Metabolism and Microbiome



Animal performance: Growth, Milk yield, Carcass weight, Intramuscular fat (Modified from McCann et al., 2014; Wanapat et al., 2014)

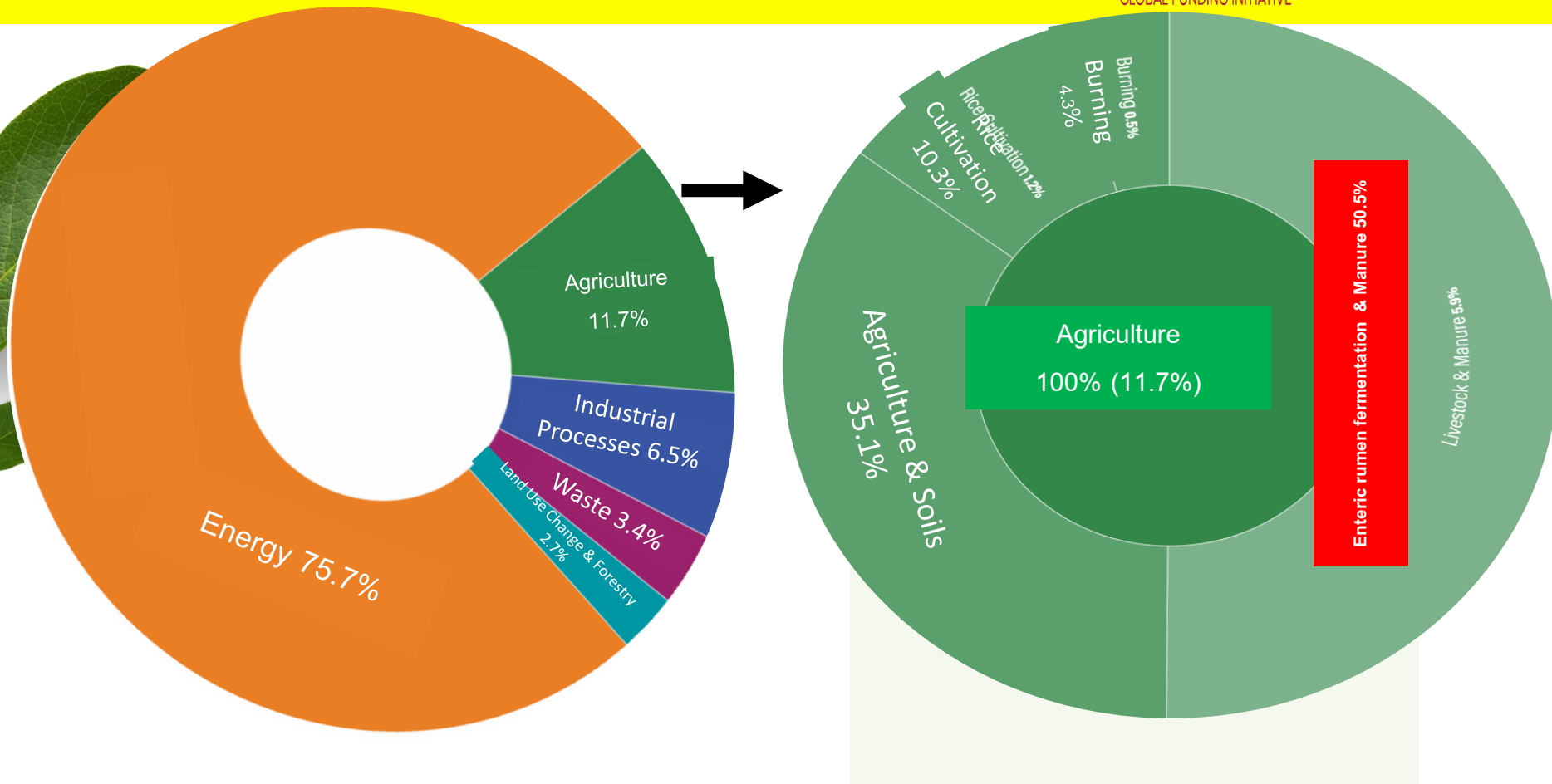
Rumen methane emission



Global greenhouse gas emissions



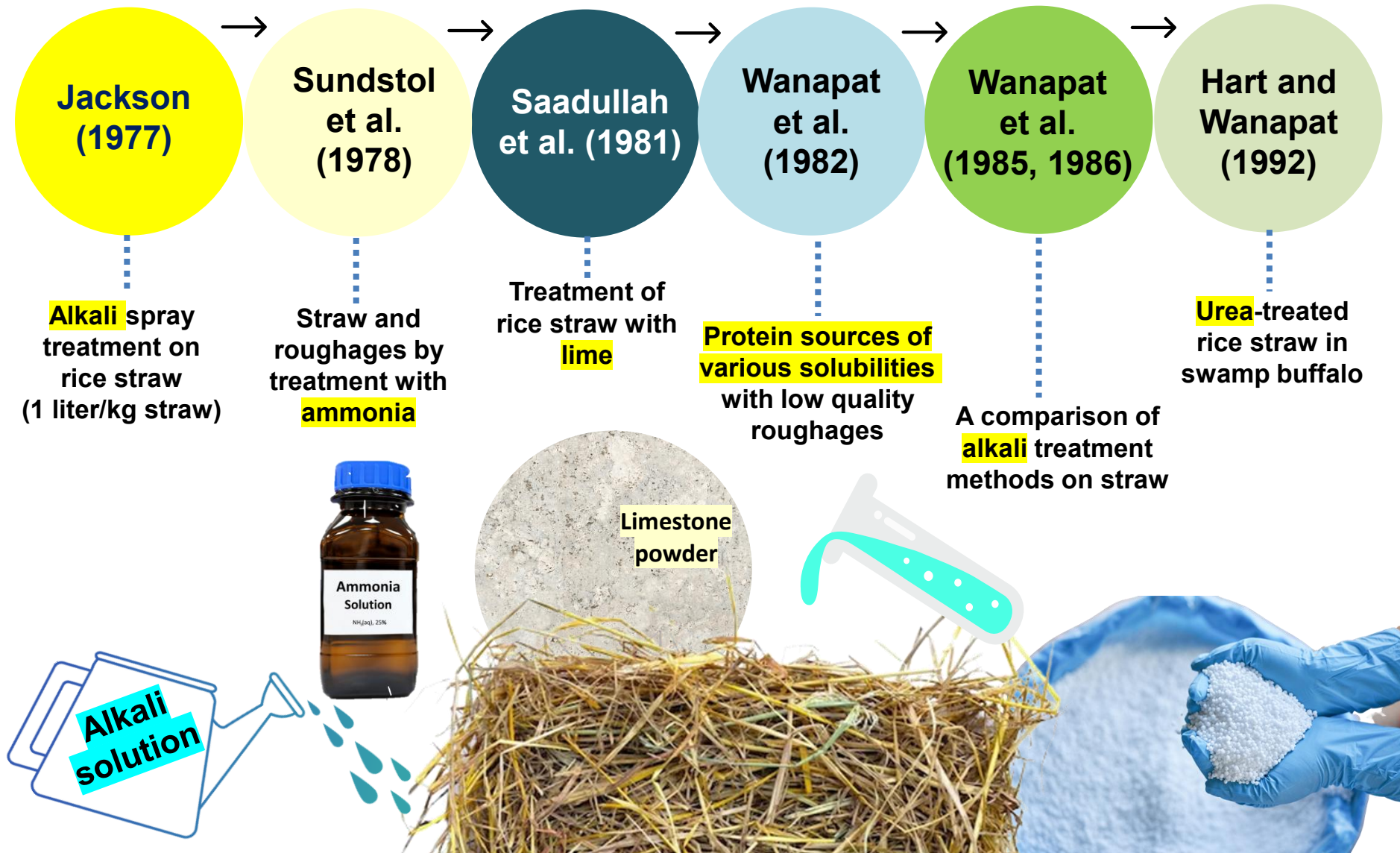
GLOBAL FUNDING INITIATIVE



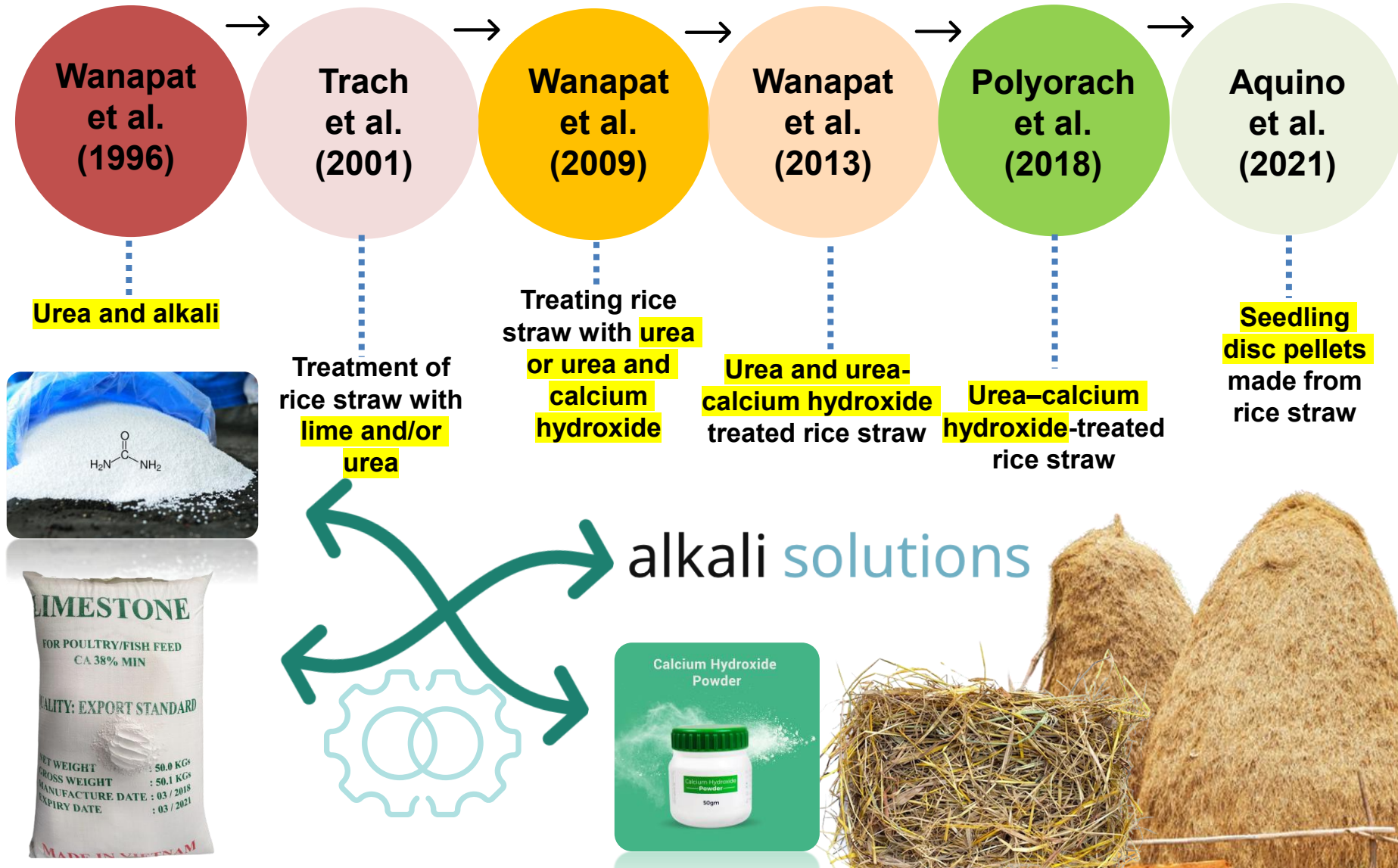
Source: Ranganathan et al. (2018) and Ge et al. (2024)



Some selected publication on chemical treatment methods of crop-residues focusing on rice straw



Some selected publication on chemical treatment methods of crop-residues focusing on rice straw

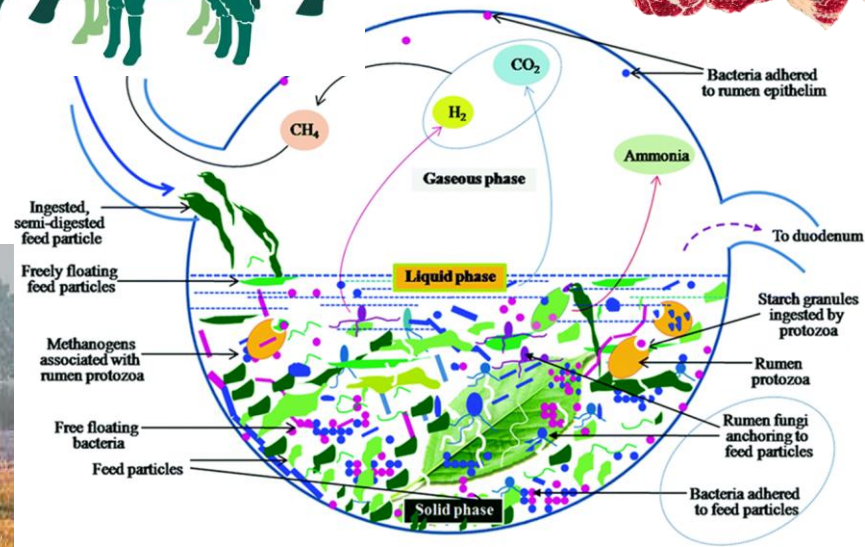




Global warming



Meat & milk yield and functional foods



Source: Singh et al. (2019)

Soucre: Wanapat (2023)

Step to prepare urea-lime treated rice straw (U-lime TRS)



Water 100 kg

1. Prepare mixture solution of urea (2%) lime (2%) and water (100 kg.)





Tropical Feed Resources Research and Development Center (TROFREC)

Department of Animal Science, Faculty of Agriculture, Khon Kaen University, Khon Kaen 40002, Thailand



Urea-calcium hydroxide ($\text{Ca}(\text{OH})_2$)

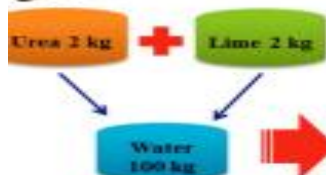
Treatment of rice straw

Background



Considerable attention has been given to improving the feeding value of low-quality roughage through physiological, biological and chemical processes (Devendra, 2003; Wanapat et al., 2009). The importance of such improvements in animal feeding systems warrants even more attention in the developing countries (Wanapat, 1981; Wanapat et al., 2013).

Methods



Urea-lime treated rice straw (ULRS) was prepared by using 2 kg of urea plus 2 kg of lime, mixed with 100 kg of water, then poured the mixture solution to 100 kg of RS (6 bales of RS, each bale weighing approximately 15 - 20 kg), and then covered with a plastic sheet for at least 10 days before feeding to the livestock (Wanapat et al., 2009; Polyorach and Wanapat, 2014; Polyorach et al., 2018).

The nutritive value of urea-lime treated rice straw (% of dry matter)

- Dry matter 51.2%
- Organic matter 83.7%
- Crude protein 5.6%
- Neutral detergent fiber 76.3%
- Acid detergent fiber 57.9%

Source: Wanapat et al. (2011)

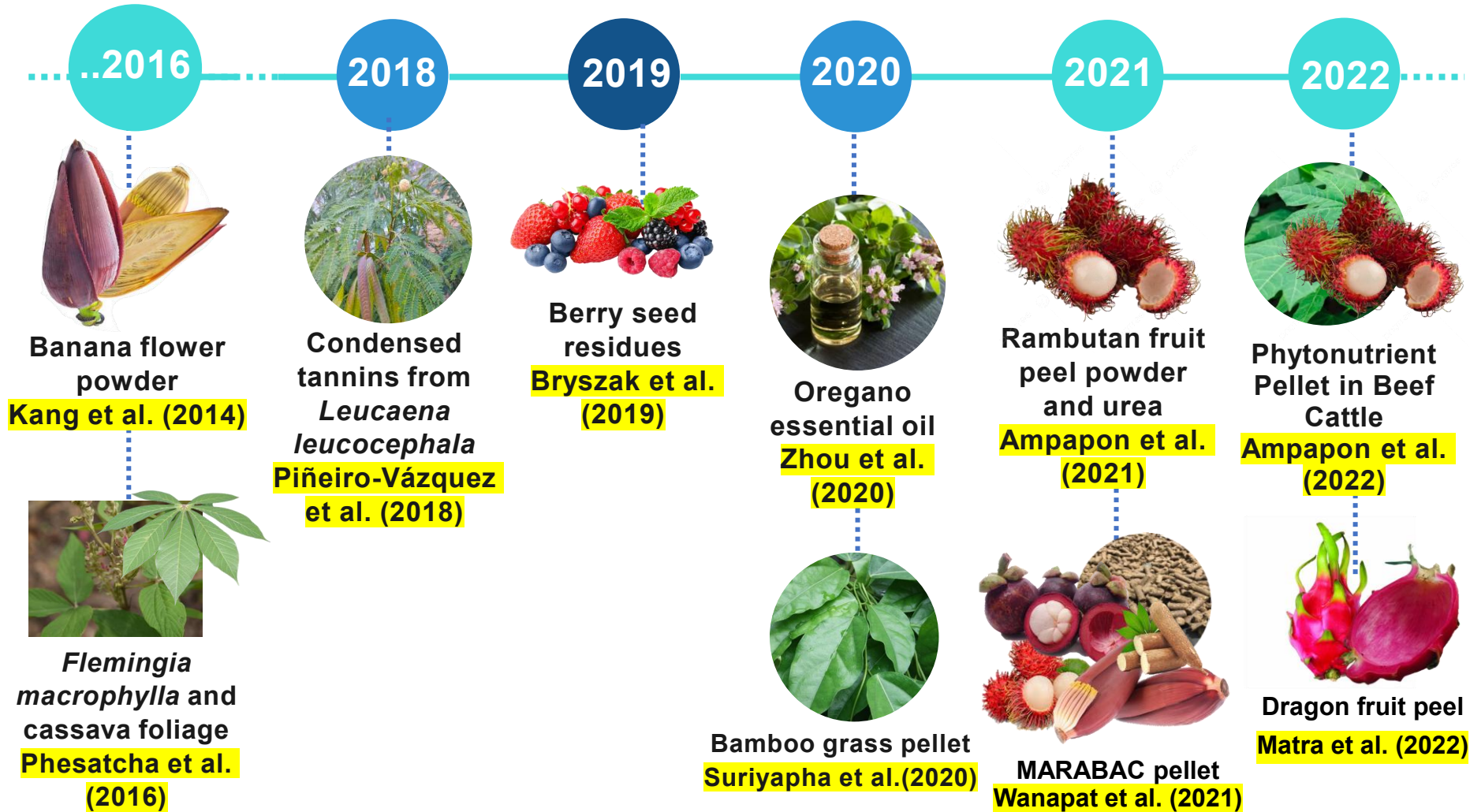
Benefits

- Improving the nutritive value of rice straw especially CP, nutrients digestibility etc.
- Enhancing fermentation efficiency, microbiome, and productivity
- Reduction of the treatment cost
- Mitigating rumen methane production

References

- Wanapat, M., Polyorach, S., Boonap, K., Mapato, C., Cherdthong, A. 2009. Effects of treating rice straw with urea or urea and calcium hydroxide upon intake, digestibility, rumen fermentation and milk yield of dairy cows. *Unest. Sci.* 125(2-3): 258-265.
- Polyorach, S., Wanapat, M. 2014. Improving the quality of rice straw by urea and calcium hydroxide as rumen ecology, microbial protein synthesis in beef cattle. *J. Anim. Physiol. Anim. Nutr.* 99(2): 449-456.
- Polyorach, S., Wanapat, M., Paangchamphu, O., Cherdthong, A., Gurus, F., Gurus, M., Kang, S. 2018. Effect of fermentation using different microorganisms on nutritive values of fresh and dry cassava root. *Asian J. Anim. Vet. Adv.* 15:125-135.

Methane abatement strategies in ruminants





BAFLOP... MARABAC



MARABAC manipulated rumen fermentation (Wanapat et al., 2021)



MARABAC pellet



HC

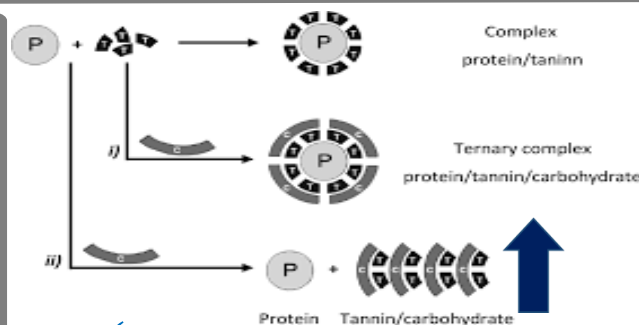
pH = 5.74



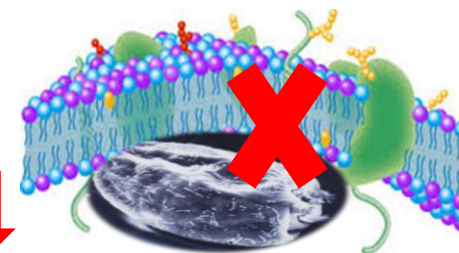
HCS + MARABAC pellet

pH = 6.19

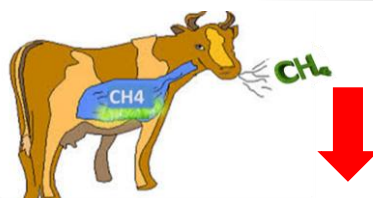
✓ Enhanced ruminal pH



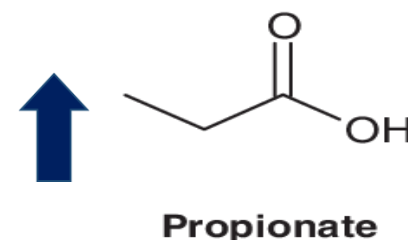
✓ Binding protein



✓ Protozoal population



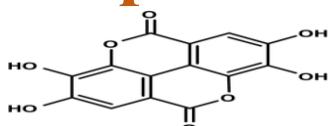
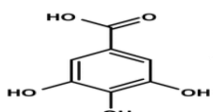
✓ Methane mitigation



✓ 10.5 %

Condensed tannins

✓ 11.7 % Saponins





Phytonutrient pellet (MARABAC)



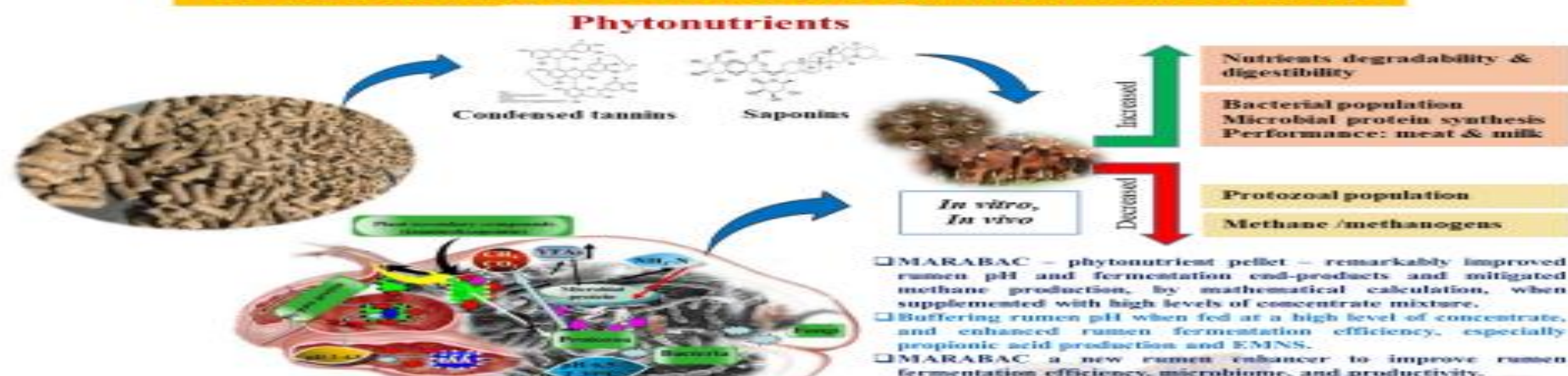
Tropical Feed Resources Research and Development Center (TROFREC), Department of Animal Science, Faculty of Agriculture, Khon Kaen University, Khon Kaen 40002, Thailand



MARABAC preparation



Effect of MARABAC on ruminant nutrition



**Urea-lime (2+2%)
treated rice straw**

✓ DMI, digestibility fed U-lime treated rice straw, increased 31.4% and 10.2% (**Polyorach et al., 2014**)

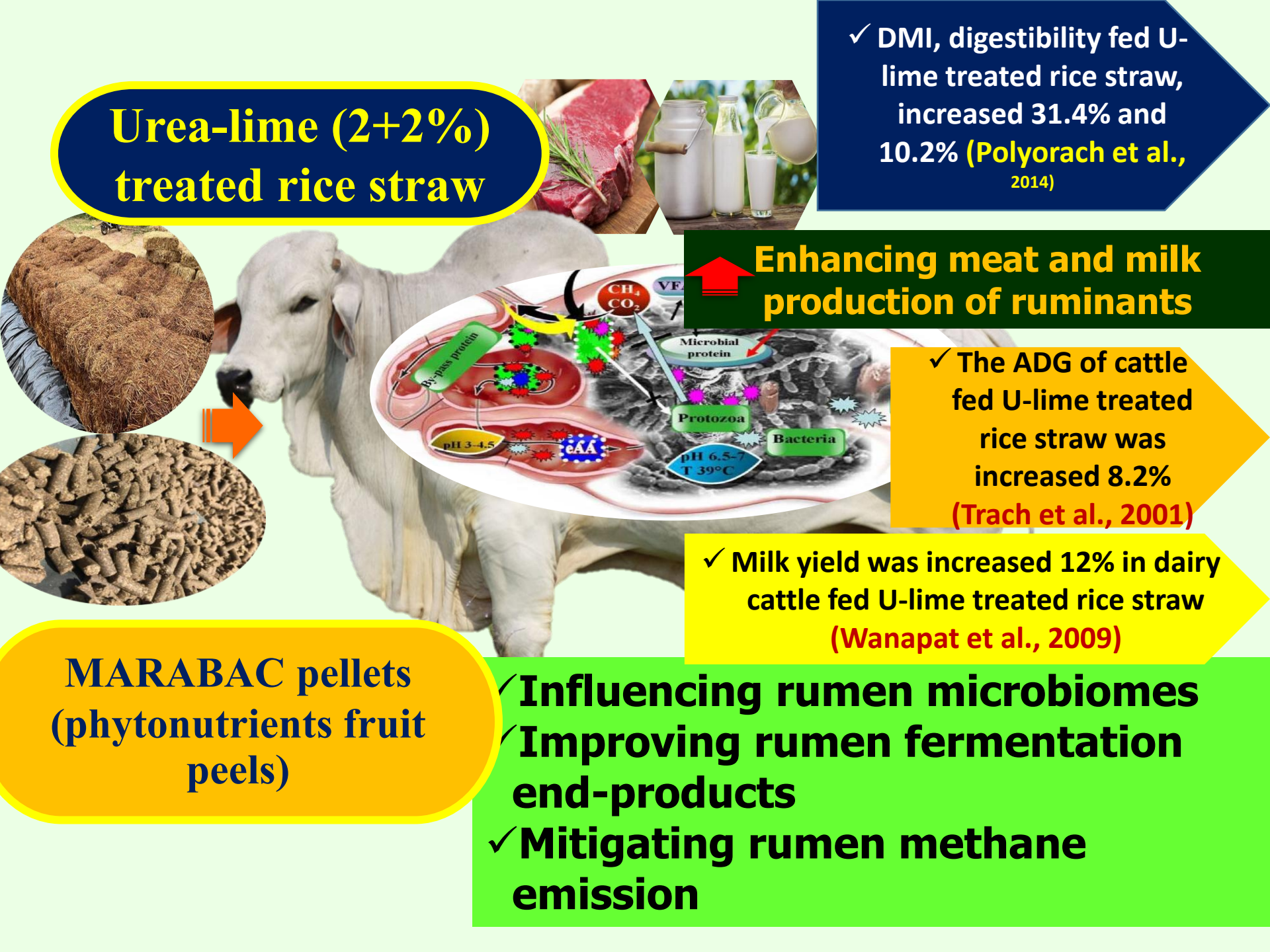
**Enhancing meat and milk
production of ruminants**

✓ The ADG of cattle fed U-lime treated rice straw was increased 8.2% (**Trach et al., 2001**)

✓ Milk yield was increased 12% in dairy cattle fed U-lime treated rice straw (**Wanapat et al., 2009**)

**MARABAC pellets
(phytonutrients fruit
peels)**

✓ Influencing rumen microbiomes
✓ Improving rumen fermentation end-products
✓ Mitigating rumen methane emission





Khon Kaen University,
Thailand



ĐẢNG CÔNG SẢN VIỆT NAM QUANG VINH MUÔN NĂM



Kunming, China



Luang Prabang, Laos



Hochi Minh, Vietnam



Vientiane, Laos



Phnom Penh,
Cambodia



Hanoi, Vietnam





合作瀾湄



MARABAC pellet



U-lime treated RS



Beef rich in bioactive compounds





Workshop in Yunnan, P.R. China



合作 瀾湄



Workshop in Phnom Penh, Cambodia



合作湄



ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນະຖາວອນ



ປະທານ



REDMI NOTE 9S
AI QUAD CAMERA

Workshop in Luang Prabang, Lao, PDR.

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນະຖາວອນ



ປະທານ



2023/6/13 14:33

合作 瀾湄



Workshop in Hochi Minh, Vietnam





Workshop in Vientiane, Lao, PDR.



Workshops outputs/outcomes by RABIF-BeefC Project (Year 2022-2025) (>1000 participants)		
Activities	Participants/no.	LMC/Others
Training Workshop & On-line Zoom	>500	Thailand (6)
Training Workshop	>150	Cambodia (4)
Training Workshop	>150	Luang Prabang, Lao PDR. (4)
Training Workshop	>100	Vientiane, Lao PDR. (2)
Training Workshop	>150	Hochi Minh, Vietnam (4)
Training Workshop	>150	Hanoi, Vietnam (2)
Training Workshop	>150	Kunming, PR. China (2)
On-farm Demonstrations	>10	LMC members (5)
Publication	4	Q1, Tier 1
Short VDO Clips	>10	LMC members (5)
Total	>1000	RABIF-BeefC Project activities

Workshop in Luangprabang, Lao, PDR.



Moving towards achievements..



**Initiatives & passions will lead to obtaining outputs/outcomes/impacts..
Everything is possible, Nothing is Impossible...**



Brief VDO clip # RABIF-BeefC Project



云南省外国专家彩云奖颁奖仪式

Yunnan Friendship Award Ceremony For Foreign Experts

2019.10

云南·昆明



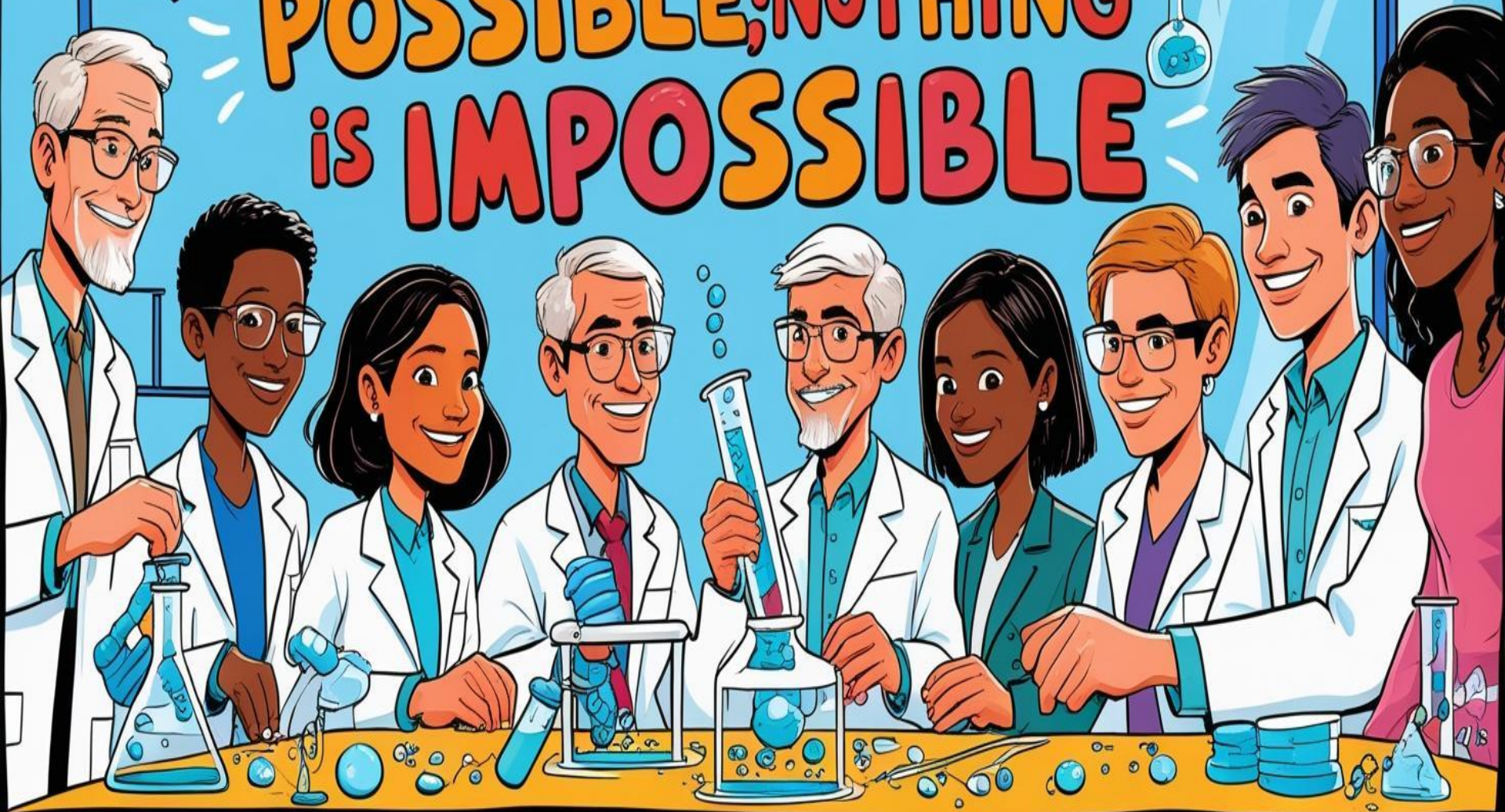
草堂心语

Yunnan Friendship Award Ceremony For Foreign Experts 2019





**EVERYTHING is
POSSIBLE; NOTHING
is IMPOSSIBLE**



HAPPILY WORKING HARD!





THINK GLOBALLY, ACT LOCALLY

Prof. Dr. Metha Wanapat

KKU
Khon Kaen
University





Thank you & With best wishes!

