PRACTICING SUSTAINABILITY SCIENCE AT COMMUNITY LEVEL AND CONTRIBUTING TO ACHIEVEMENT OF SDGs:

Framework and Experience from an On-going Initiative at ANDALAS UNIVERSITY – INDONESIA.

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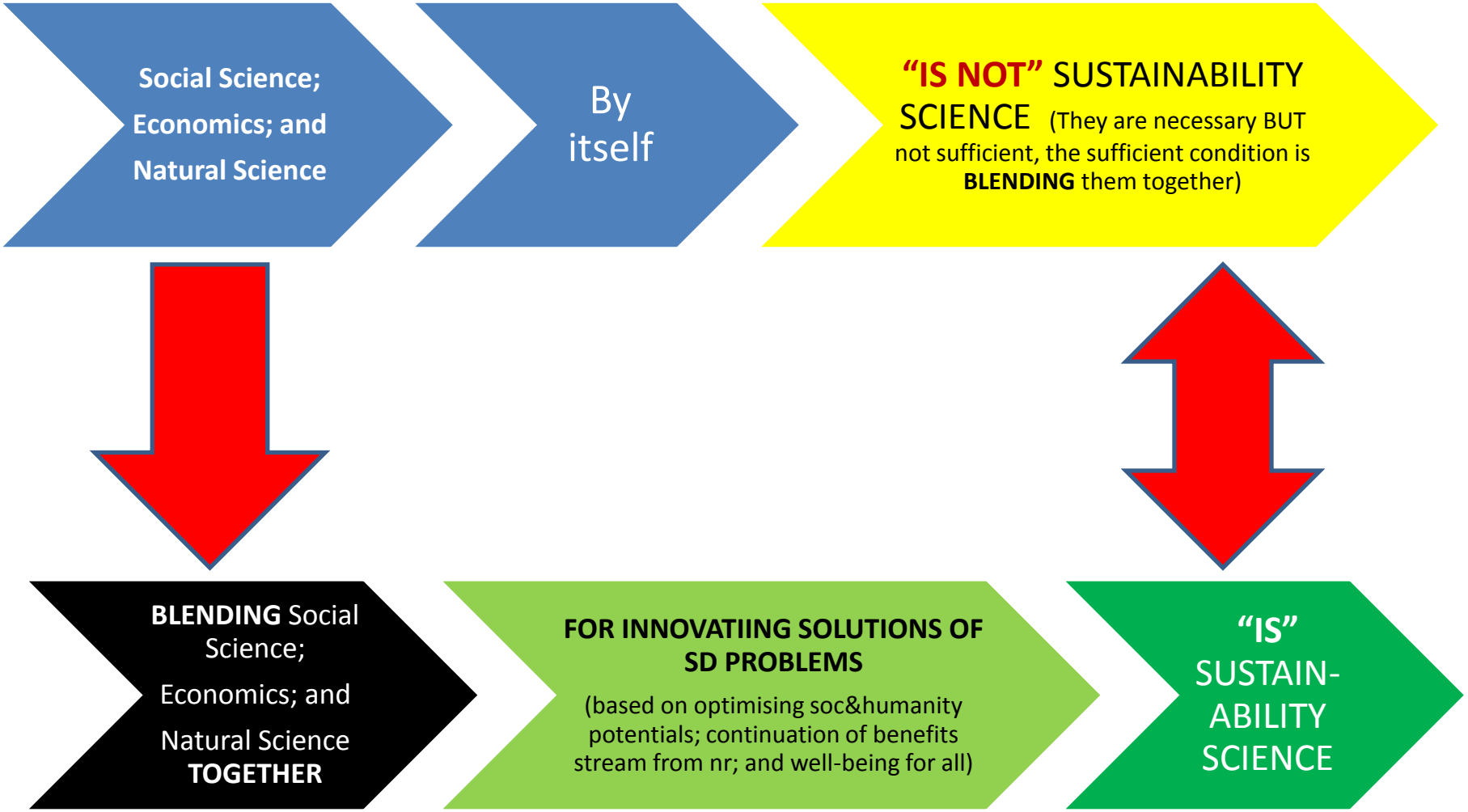
Outline

- What “is” and what “is not” sustainability science?
- Our initiative at ANDALAS UNIVERSITY: Focus on practicing sustainability science at community level.
- Framework and Experience from an On-going Initiative at ANDALAS UNIVERSITY, INDONESIA.
- Progress so far.
- Concluding notes.
- Some photos.

What “is” and what “is not” Sustainability Science

- Elements of sustainability science:
  - **interdisciplinary** (trans-disciplinary; cross-disciplinary; or multidisciplinary), the keyword is ***BLENDING***;
  - **solutions oriented** (of SD problems/issues/challenges);
  - **optimising social and humanity potential** (through learning process approach);
  - **Maiantaining continuation of benefits stream** (from natural resources→ONE PLANET);
  - **Well-being for all**.


Social Science; Economics; and Natural Science
By itself
"IS NOT" SUSTAINABILITY SCIENCE (They are necessary BUT not sufficient, the sufficient condition is BLENDING them together)
BLENDING Social Science; Economics; and Natural Science TOGETHER
FOR INNOVATIING SOLUTIONS OF SD PROBLEMS
(based on optimising soc&humanity potentials; continuation of benefits stream from nr; and well-being for all)
"IS" SUSTAIN-ABILITY SCIENCE

Nature, Journal of Science, Vol 517, 1 January 2015 --1

- Physiscs, chemistry, biology and the environmental sciences can deliver wonderful solutions to some of the challenges facing individuals and societies, **but whether those solutions will gain traction depends on factors beyond their discoverers' ken**.
- ***If social , economic and/or cultural factors are not included in the framing of the questions, a great deal of creativity can be wasted*** (p.5).

Nature, Journal of Science, Vol 517, 1 January 2015 --2

- **All credit, therefore, to those who establish multidisciplinary projects – and who *integrate* natural sciences, social sciences and humanities *from the outset*.** The ***mutual framing*** of challenges is the surest way to overcome the conceptual diversities and gulfs that can make such collaborations a challenge.
- ***If you want science to deliver for society, through commerce, government or philanthropy, you need to support a capacity to understand that society that is as deep as your capacity to understand the science (p.5).***

... Therefore, **SUSTAINABILITY SCIENTISTS** are those who are, from the begining of their research/studies, systematically made every efforts to do interdisciplinary BLENDING “nicely” and produce innovative solutions to SD problems/issues/challenges
(*those which optimising social and humanity potentials; maintaining continuation of benefits stream; and creating well-being for all*).

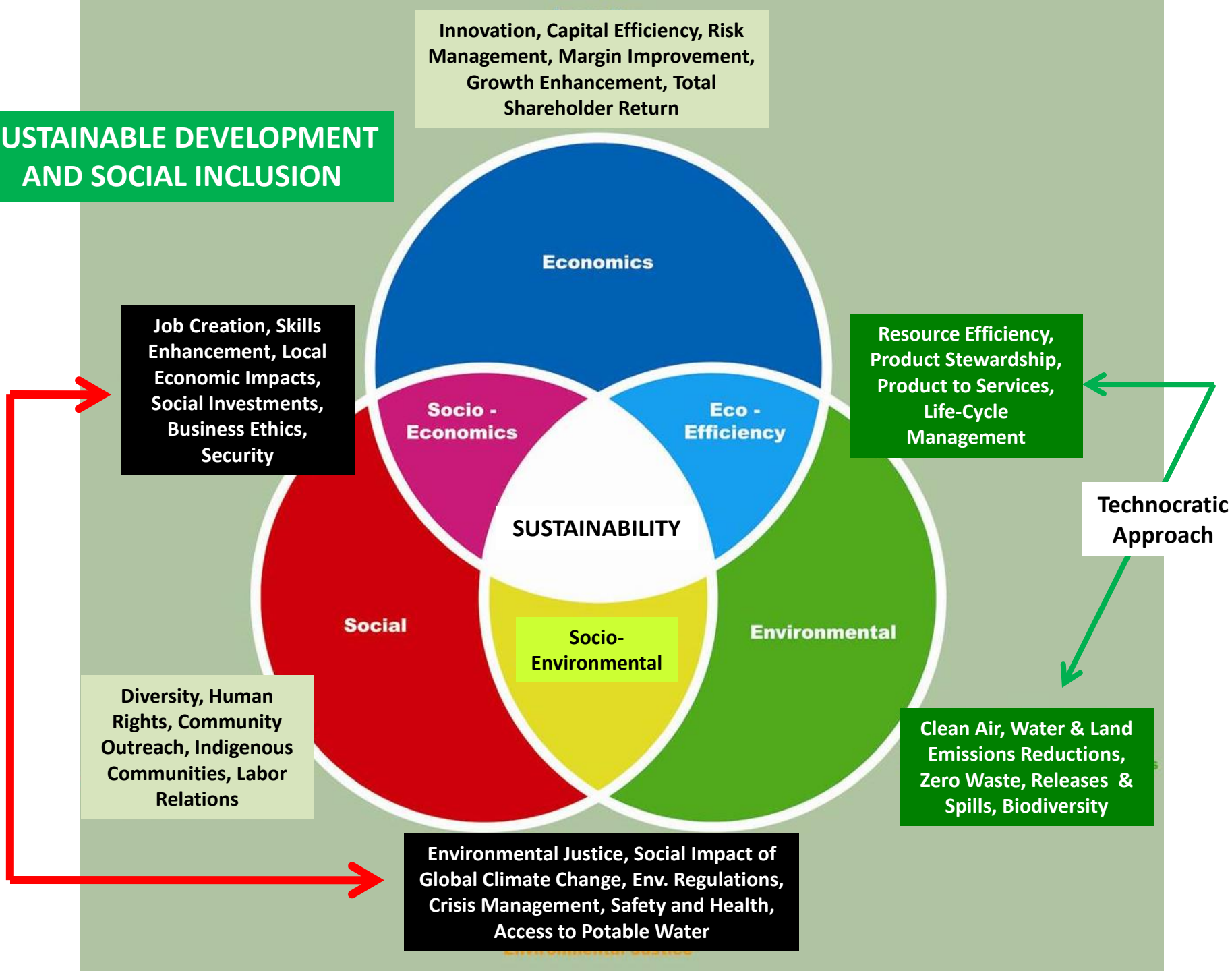
Our initiative at ANDALAS UNIVERSITY, Indonesia:

Focus on practicing sustainability science at community level.

What are the issues at community level?

- Sustainable livelihoods (of the poors and marginal groups in the community) as part of the SDGs → got less attention in the past (neglected).
- SUSTAINABLE DEVELOPMENT **ACTIONS at local level** to deal with livelihoods improvement of the poors and marginal groups → were *less intensive compare to those at global level (producing declarations and statements)*.
- Application of technologies and innovations is a key to sustainable livelihoods improvement → *knowledge management at local level still weak*.
- Synergy among sustainable development actors (***government/university and research institutions/private sector/community***) were weak to support actions at local level for sustainable development.

SUSTAINABLE DEVELOPMENT AND SOCIAL INCLUSION



… think globally, act locally
(***but less attention on local actions***)

- Sustainability aspects are interelated each other, encompassing issues from global to local levels and involving actors from differents sectors → ***there is a need to balance between the aspect of think globally and act locally.***
- The IISD report → concluded that ***"we can no longer rely principally on the approach centered on global summits, universal agreements and independent commisions"*** (Halle, Najam and Beaton, 2013: p3).
- → it is time to **put more attention and resources to various aspects of *"act locally"*** (with global support), so that sustainable livelihoods and agriculture happening in reality.

- **The 2013 World Social Science Report: "Global sustainability requires concerted action to protect planet's bounty and, simultaneously, to safeguard social equity, human dignity and well-being for all" (ISSC/UNESCO, 2013: p.3).**

Lack of synergy and concerted actions (esp. at local level)

- **Scientific knowledge NOT meet with public policies**: → the need to promote a knowledge-based (evidence-based) public policy.
- Maurice Strong's Report on Connecting with the World (1996) noted that **the problem is NOT always a lack of information BUT** the problem is → **inadequate capacity to translate information/knowledge/innovation into:**
  - **useful policy, and**
  - **appropriate actions**.
  - **(how to do it?) → we experimenting through COMMUNITY LEARNING AND ACTION CENTER (CLAC) as platform for synergy.**

Application of technology and innovations to increase productivity → the concept of **Total Factor of Productivity (TFP)**

- TFP is a measure of the efficiency of all inputs to a production process. Increases in TFP result usually from **technological innovations** or **improvements.**

  (Source: http://www.businessdictionary.com/definition/total-factor-productivity-FTP.html).

- Total Factor Productivity is often seen as **the real driver of growth** within an economy and studies reveal that whilst labour and investment are important contributors, **Total Factor Productivity may account for up to 60% of growth within economies.**

  (Source: http://en.wikipedia.org/wiki/Total_factor_productivity)

- **Research** → Source of technological innovations and improvement.
- → **How to bridge research, policy and actions → to IMPROVE WELL BEING OF THE POOR, MARGINALIZED AND EXCLUDED GROUPS?**

Knowledge Management and Synergy/Partnership -1.

- Current model/framework of knowledge management **could not catalyze and fast-track** innovation, research and development (R&D) and realization of economic, environmental and social benefits (→ *sustainability is about maintaining the continuation of benefits streams*).

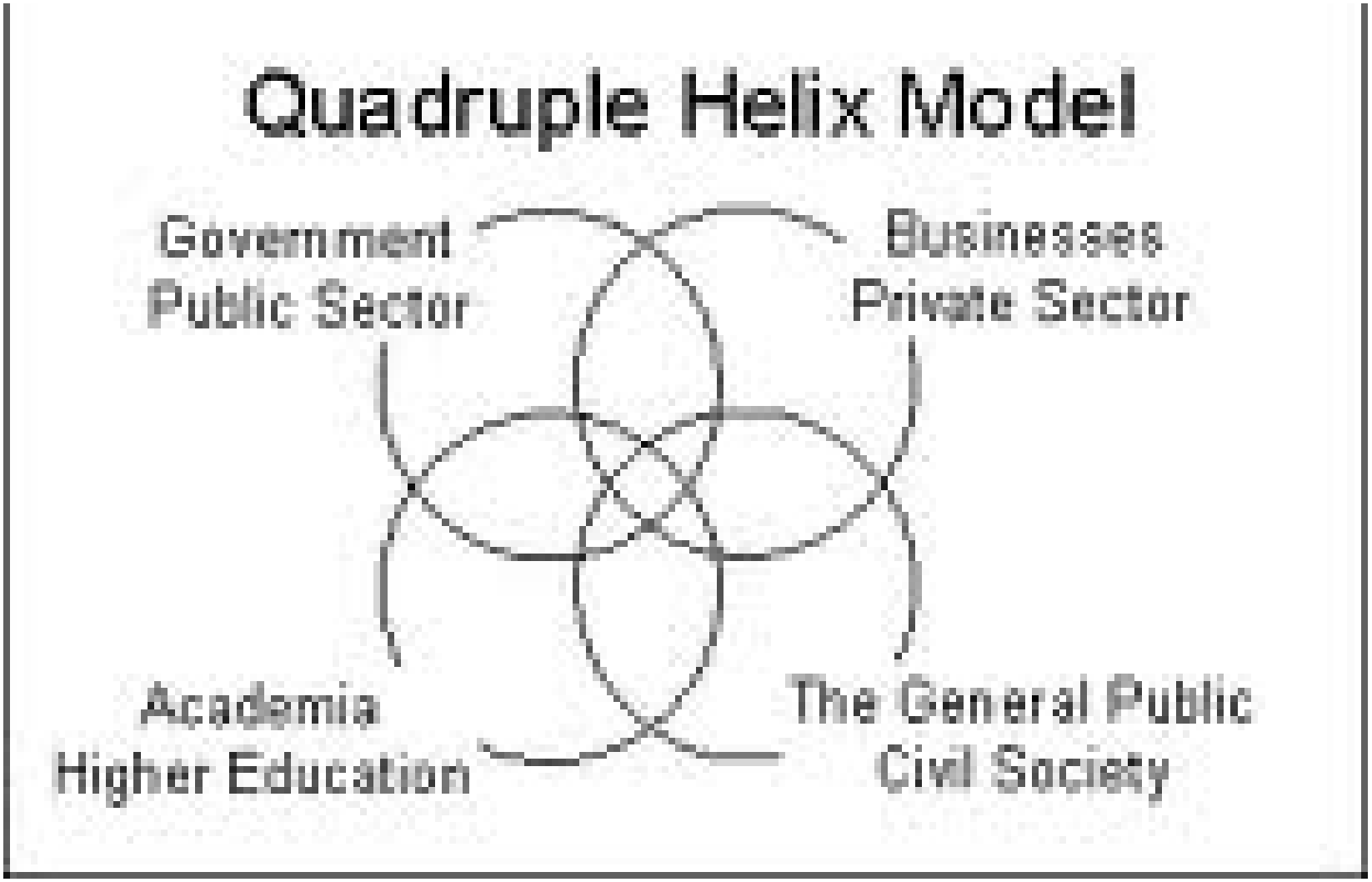
Knowledge management (KM) and Synergy/Partnership - 2

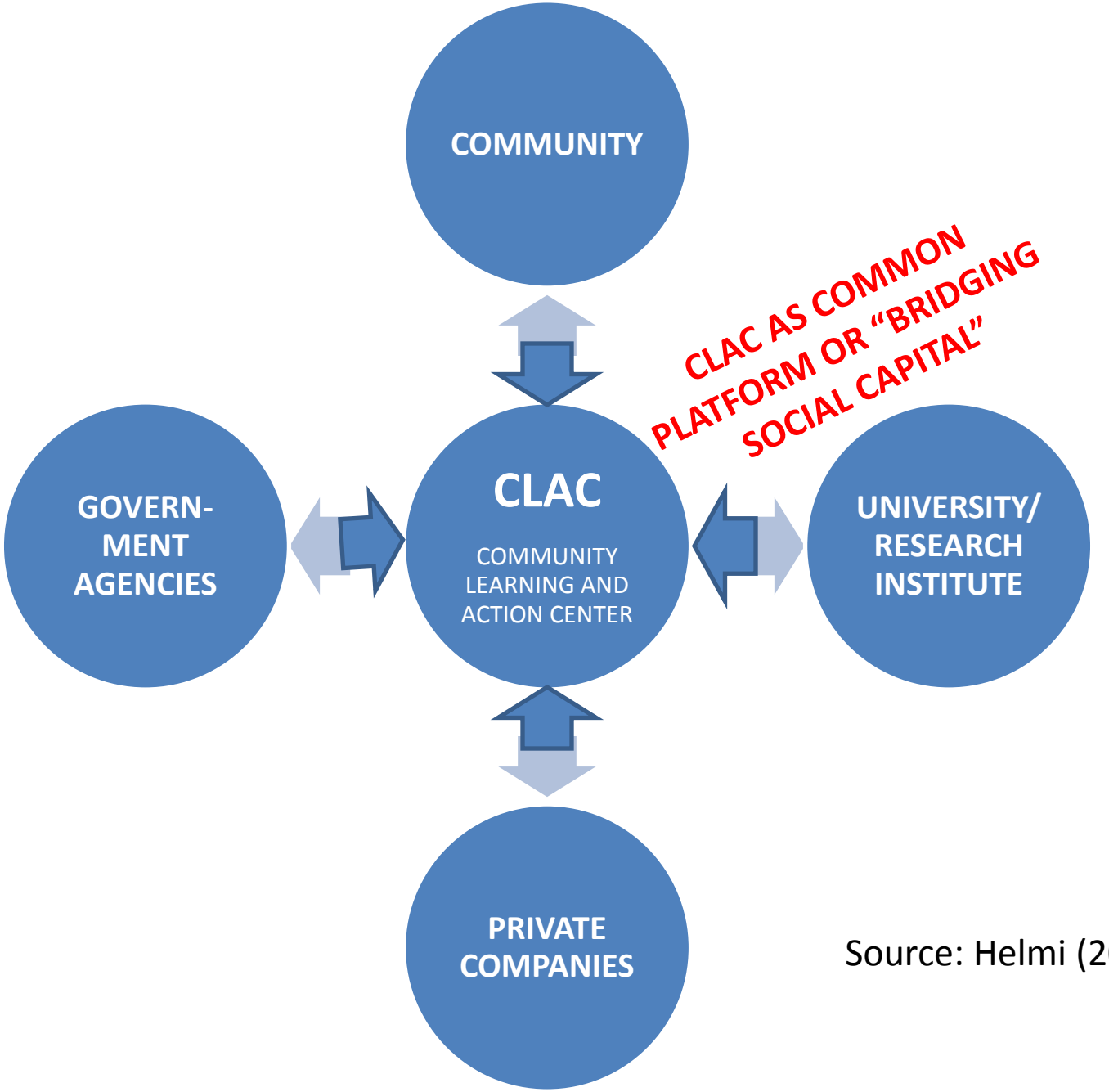
- Achievement of SD goals is something to do with knowledge management (KM).
- **KM**: effectively connecting those who know with those who need to know and converting personal knowledge into organizational knowledge.
- **Synergy/Partnership**: effectively connecting those who have/control resources with those who are in need (the poors, marginal, and excluded groups)
- Aim at **to manage not only what they know but to create and share new knowledge with others and put that knowledge into action**.

How do we addressing the issues?

- **Better KM**: **through networking → effectively connecting those who know with those who need to know → translated the knowledge into action**.
- **Capacity building** → both institutions and individuals.
- Synergy/Partnership → joint action and mobilizing resources.
- **→ Quadruple Helix model and Community Learning and Action Center (CLAC).**

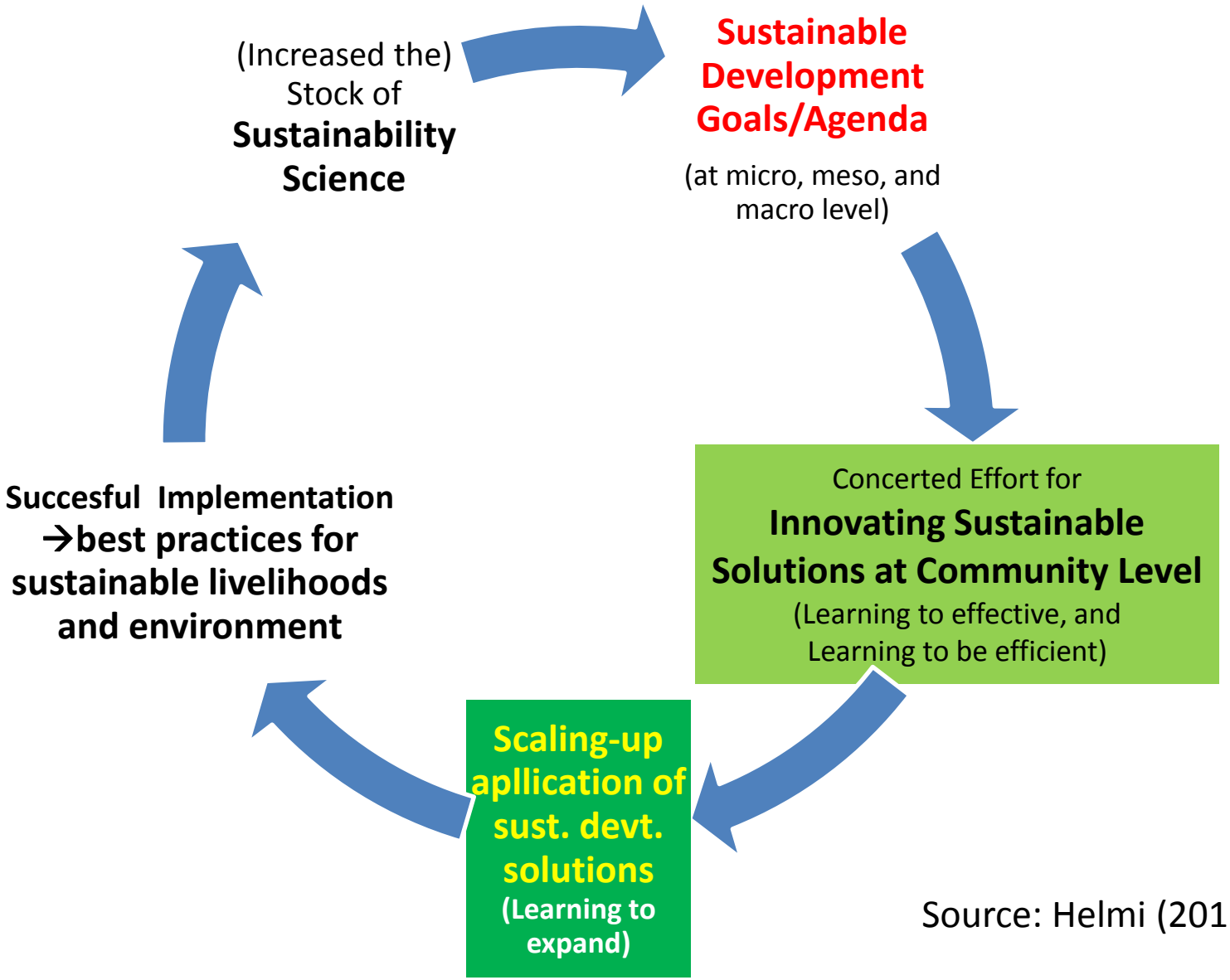
Framework and Experience from an On-going Initiative at ANDALAS UNIVERSITY, INDONESIA


Quadruple Helix Model
Government
Public Sector
Businesses
Private Sector
Academia
Higher Education
The General Public
Civil Society



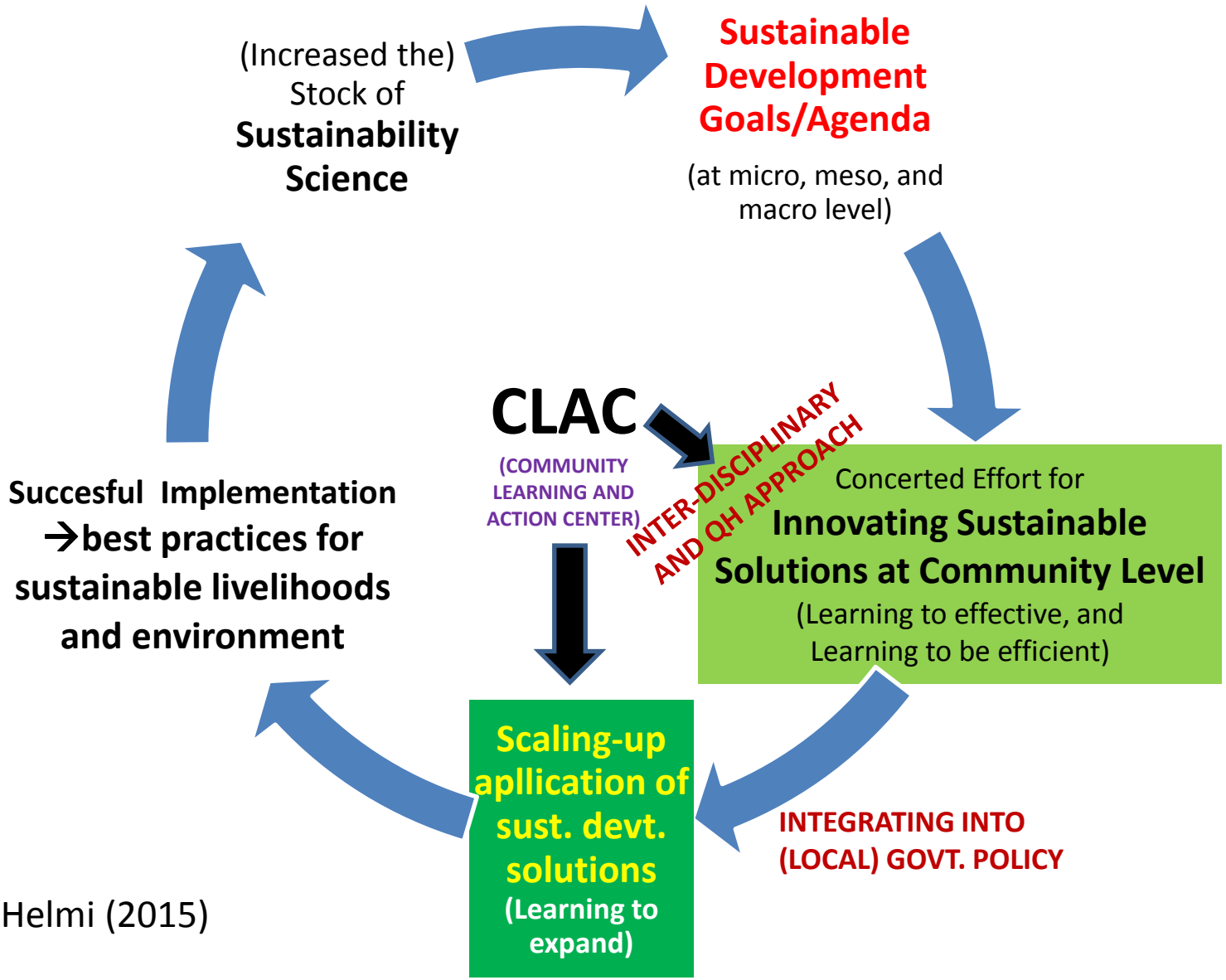
Source: Helmi (2015).

FRAMEWORK FOR PRACTICING SUSTAINABILITY SCIENCE AT COMMUNITY LEVEL AND CONTRIBUTING TO ACHIEVEMENT OF SDGs



Source: Helmi (2015)

ROLES OF CLAC IN PRACTICING SUSTAINABILITY SCIENCE AT COMMUNITY LEVEL AND CONTRIBUTING TO ACHIEVEMENT OF SDGs

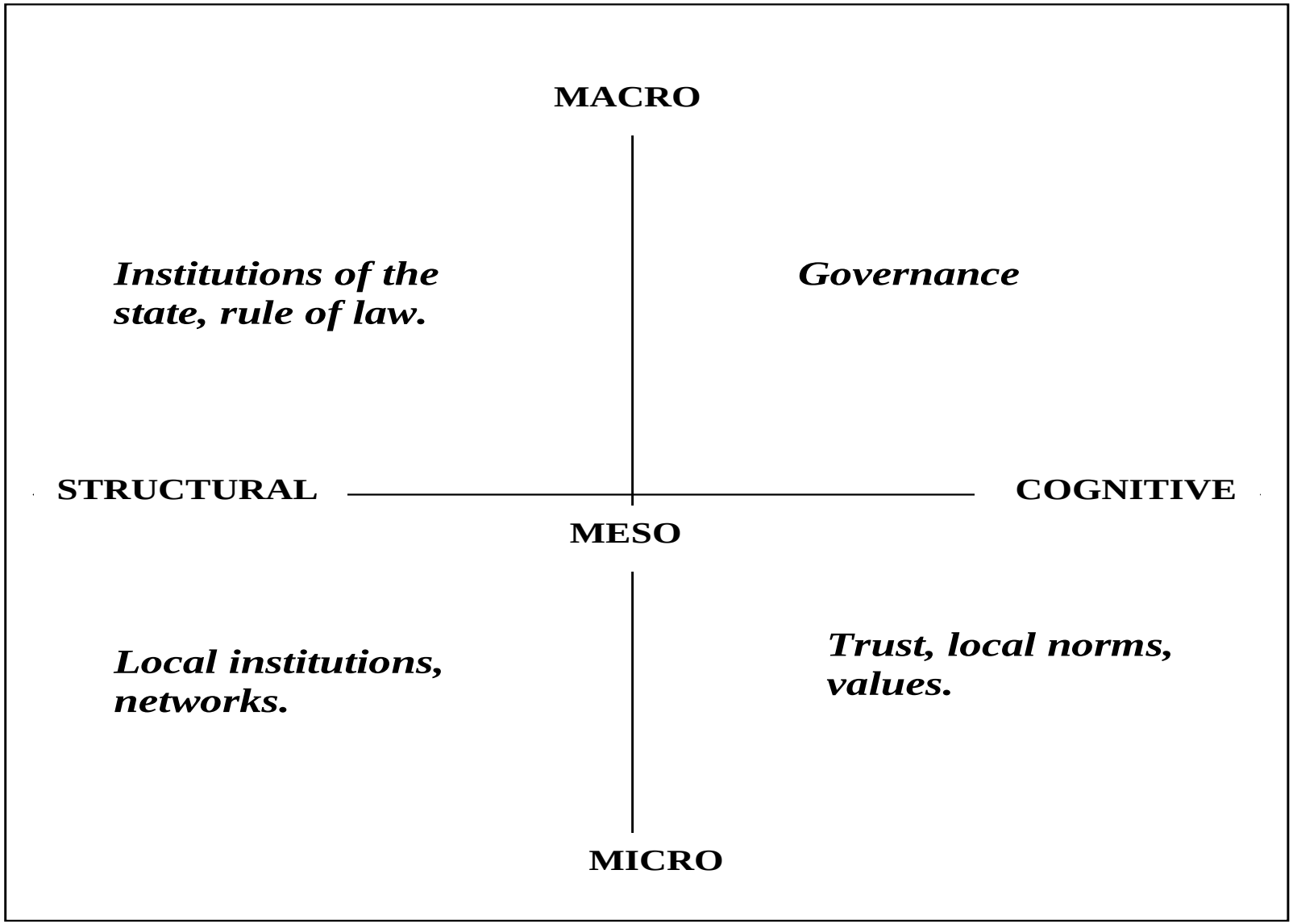


Source: Helmi (2015)

COMMUNITY LEARNING AND ACTION CENTER (CLAC) IS

ABOUT BUILDING/STRENGTHENING "SOCIAL CAPITAL" AS "SOFT" INFRASTRUCTURE FOR SOCIAL TRANSFORMATION (→ toward social inclusion)

Figure 1: Types and scope/elements of social capital.

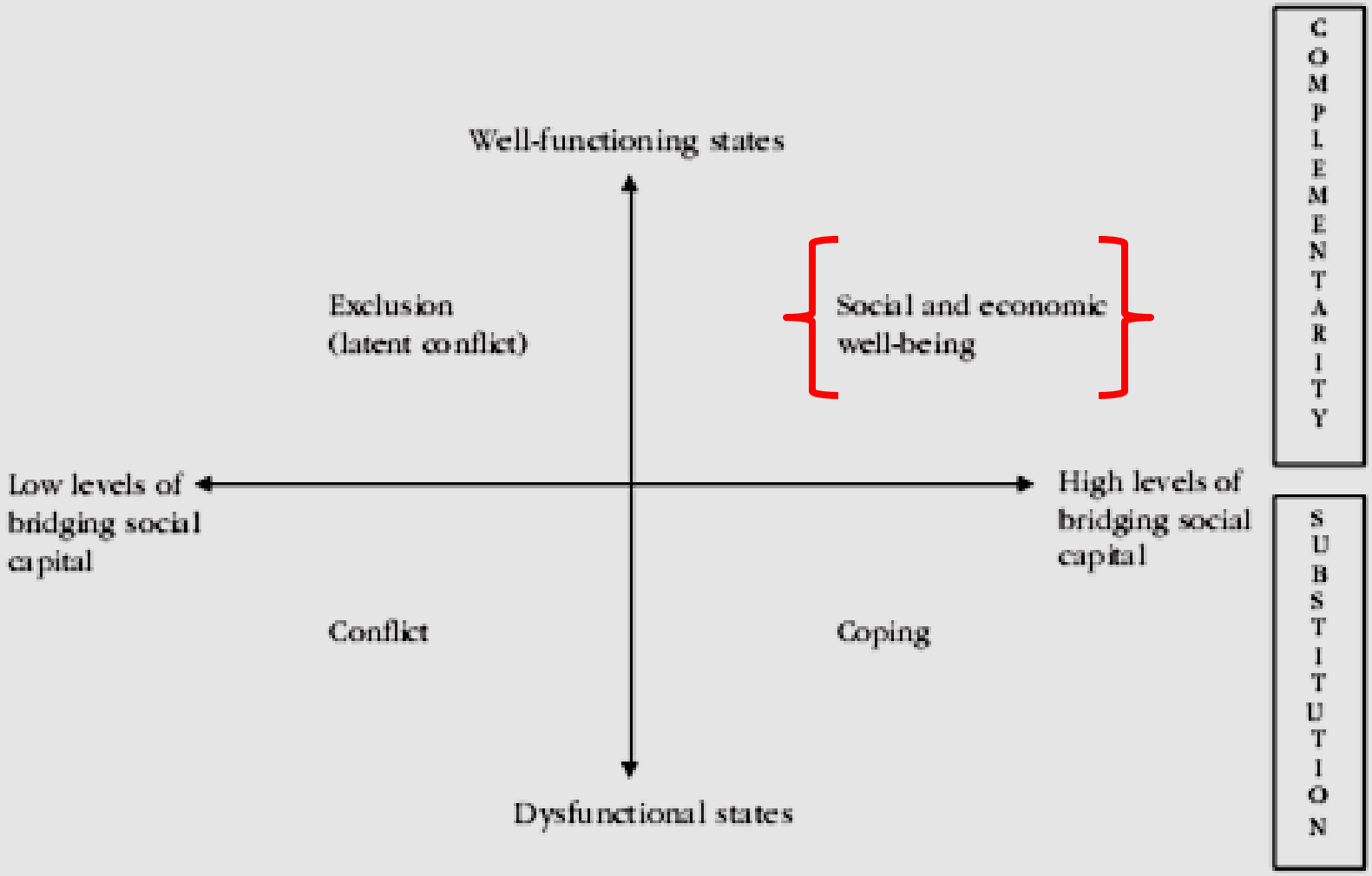


Sumber: Grootaert dan van Bastelaer (2002).

Four Views of Social Capital (Woolcock and Narayan, 2000).

Perspective	*Actors*	*Policy prescriptions*
Communitarian view		
Local associations	Community groups Voluntary organizations	Small is beautiful Recognize social assets of the poor
Networks view		
Bonding and bridging community ties	Entrepreneurs Business groups Information brokers	Decentralize Create enterprise zones Bridge social divides
Institutional view		
Political and legal institutions	Private and public sectors	Grant civil and political liberties Institute transparency, accountability
Synergy view		
Community networks and state-society relations	Community groups, civil society, firms, states	Coproduction, complementarity Participation, linkages Enhance capacity and scale of local organizations

Figure 2. *Relationship between Bridging Social Capital and Governance*



Note: Complementarity refers to the optimal interaction of government and markets in civil society; substitution is the replacement by informal organizations (families, networks, and so on) of services ordinarily provided by governments and institutions.

Source: Adapted from Narayan (1999).

Groups concern

- The poors and marginal groups (both living surrounding CLAC and other communities with similar conditions).
- These includes:
  - Poor members of community,
  - women,
  - unemployed youth, and
  - school age children (with trees for education program).
- The focus is open up employment and increasing income opportunities which is tailored with the needs to rehabilitate degraded land and forest.

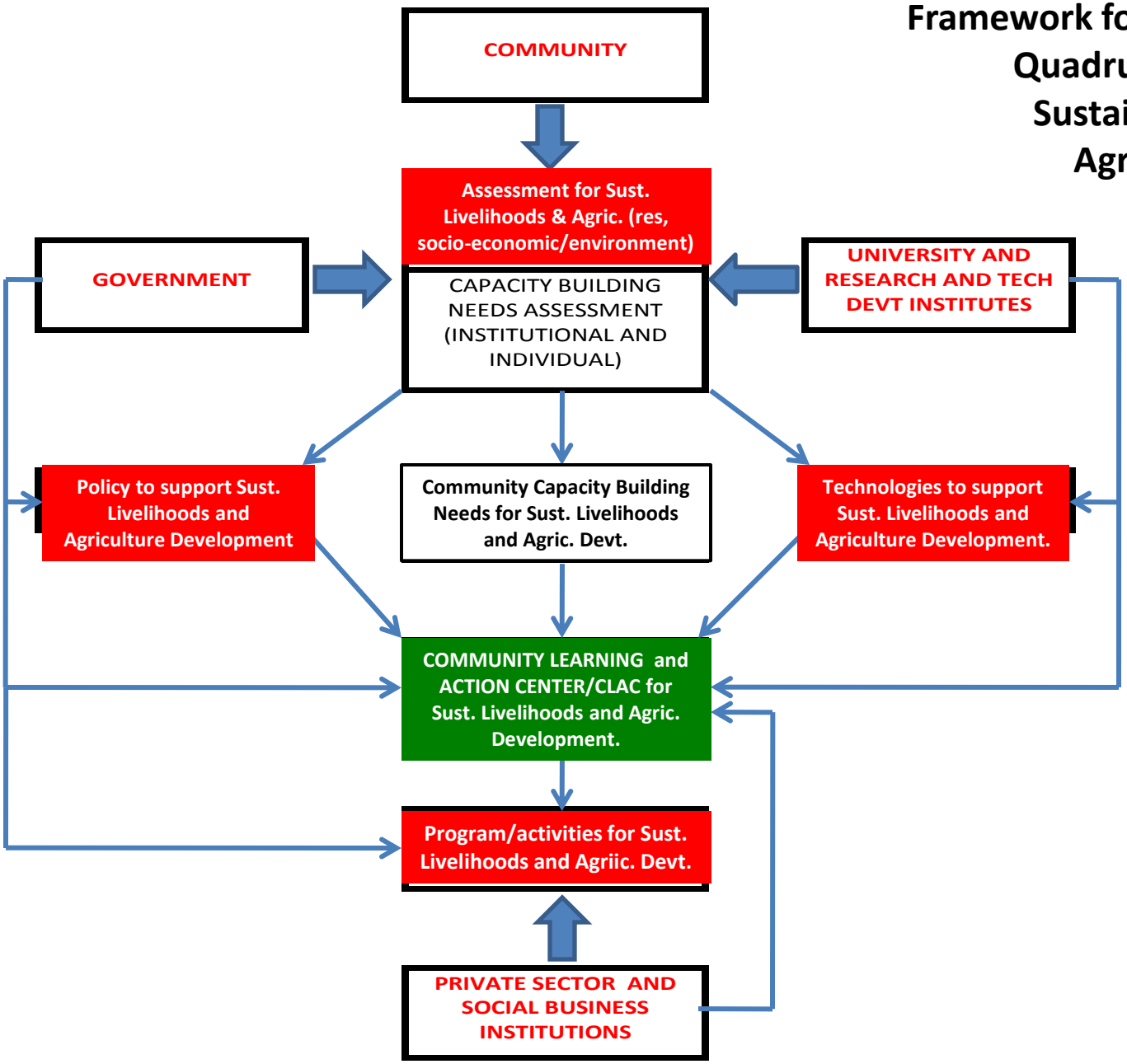
Public Policy Concern and Approach

- **Public policies concern:** natural resources management, environment, poverty alleviation, and development partnership (Quadruple Helix/QH model).
- **Approach:** The quadruple helix perspective/approach will be used as the basis to develop synergy among the stakeholders: the local people; local government at district level; the universities; and the private sectors.

Working Hypothesis

- Actions at local level for sustainable livelihoods improvement will take place if:
  - **local institutions (social capital)** for the purpose is **developed**,
  - **technical capacity** of the local actors are **built**,
  - **supporting local government policies are in place**), and
  - **partnership with private sector/social business institutions** developed.

Framework for operationalizing the Quadruple Helix Approach in Sustainable Livelihoods and Agriculture Development (Helmi, 2014).



PROGRESS SO FAR-1

- Workshop on *"Building local government and community capacity to address social impact of deforestation and land degradation in Indonesia", April 2014.*
- MasterClass Workshop on *"Community learning and action center (CLAC) for sustainable development and livelihoods improvement"*, January 2015. → QH Approach.
- With UNESCO.

PROGRESS SO FAR-2

- Provincial Agency for Livestock Development provided the CLAC with 10 cattles → for training and integrated farming.
- Visit by the **Indonesian Secretariat for South-South Cooperation** → it is plan to involve CLAC for the South-South Training Program funded by the Govt of Indonesia.
- Visit by Vice Governor of West Sumatra Province with commitment:
  - Add 25 more cattles for CLAC for training integrated farming;
  - Assistance for the surrounding farmers to plant Tropical Wheat (50 Ha)

PROGRESS SO FAR-3

- **FROM MASTERCLASS WORKSHOP**: It is planned to signed MoU on 11 March 2015 between Andalas University, Clean Power Indonesia/CPI (PRIVATE COMPANY), West Sumatra Province Govt, 3 District/City Governments: Solok, Mentawai, City of Padang (representing Forest Area Management Unit):
  - Develop bamboo forest (Local Govt./Andalas Univ/CPI);
  - Biomass electricity generation used bamboo waste (CPI/Local Govt/Andalas univ.);
  - Modification of gassification equipment for biomass electricity generation → to increase local contents and make it cheaper and develop the scale of generator suitable for community (Andalas Univ and CPI);
  - Studies of the government policy on "non-timber forest product" (bamboo) by Andalas University.
- CLAC WILL FUNCTION AS TRAINING AND ACTION CENTER FOR BIOMASS (BAMBOO)-BASED ELECTRICITY GENERATION (both for community and local government agencies staff).

PROGRESS SO FAR-4

- **FROM MASTERCLASS WORKSHOP** (continued):
  - PADANG CEMENT FACTORY (Private Company) → gave commitment to provide assistance (from CSR fund) to the farmers to expand tropical wheat planting (10 Ha), and finacial support for post-harvest of the wheat.
  - TELCOM INDONESIA (Private Company) →gave commitment to provide assistance (from CSR) to strengthen the capital of Agribusiness Micro Finance Institution.

PROGRESS SO FAR-5

- SOLOK DISTRICT GOVERNMENT → intended to reorganized their sub-district Agriculture Extension Center by using the CLAC model.
- → will ask assistance from Andalas University to do the assessment and develop a (social) business model for the Sub-district Agriculture Extension Center.

Concluding Notes

- The initiative presented here is an **applied research** attempting to **promote synergy** among sustainable development actors by using **Quadruple Helix Approach**.
- This is an attempt to develop an **integrated approach** for sustainable livelihoods and agriculture.
- The Andalas University initiative specifically aim at **increasing intensity of local actions** for sustainable livelihoods and agriculture through **building community capacity** and **transfer of technology and innovations** to improve productivity and **strengthen local institution (CLAC)**, with the support from local government and private sector.

Tropical Wheat-cultivation, and post harvest

Production of high quality and low cost of fish feed.

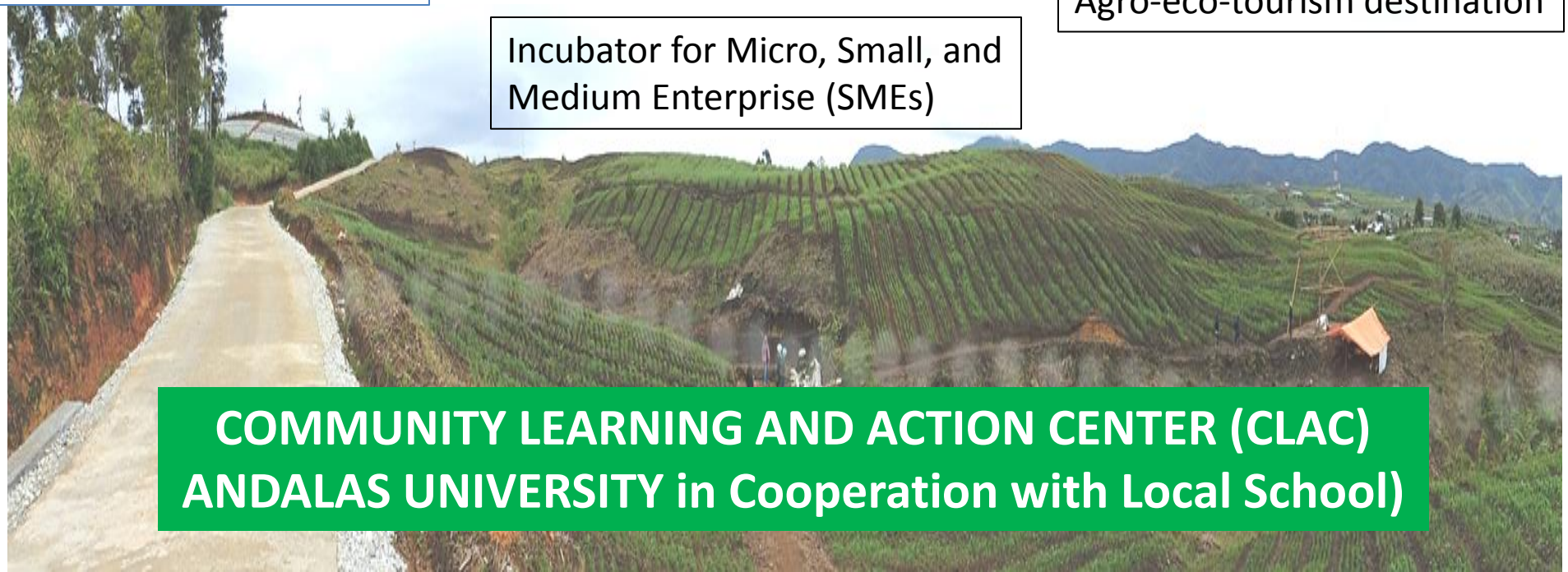
Nursery of forest plant seedlings for forest/land rehab

Cattle fattening (in line with organic fertilizer)

Organic fertilizer and soil bio-remediation.

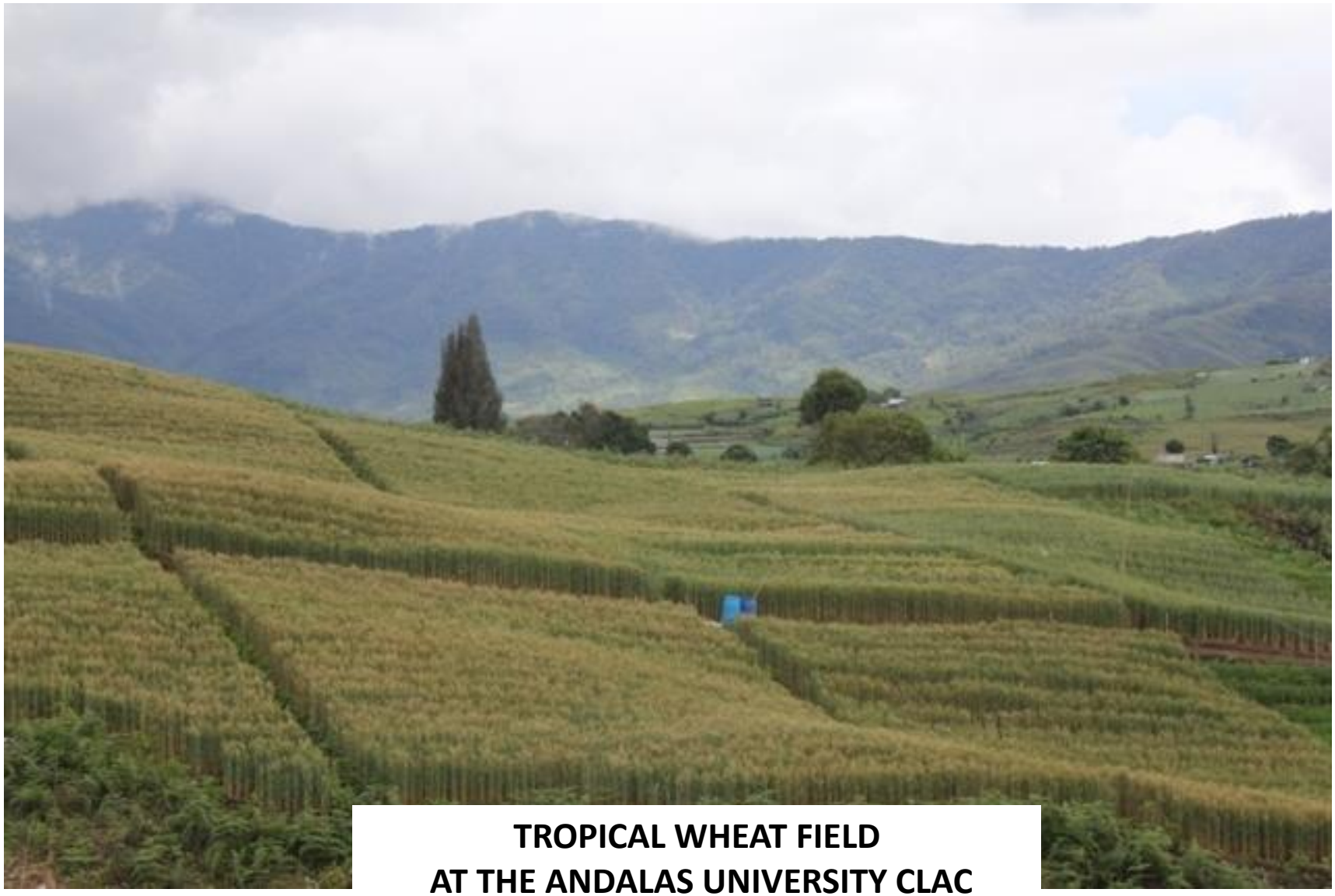
Agro-eco-tourism destination

Incubator for Micro, Small, and Medium Enterprise (SMEs)



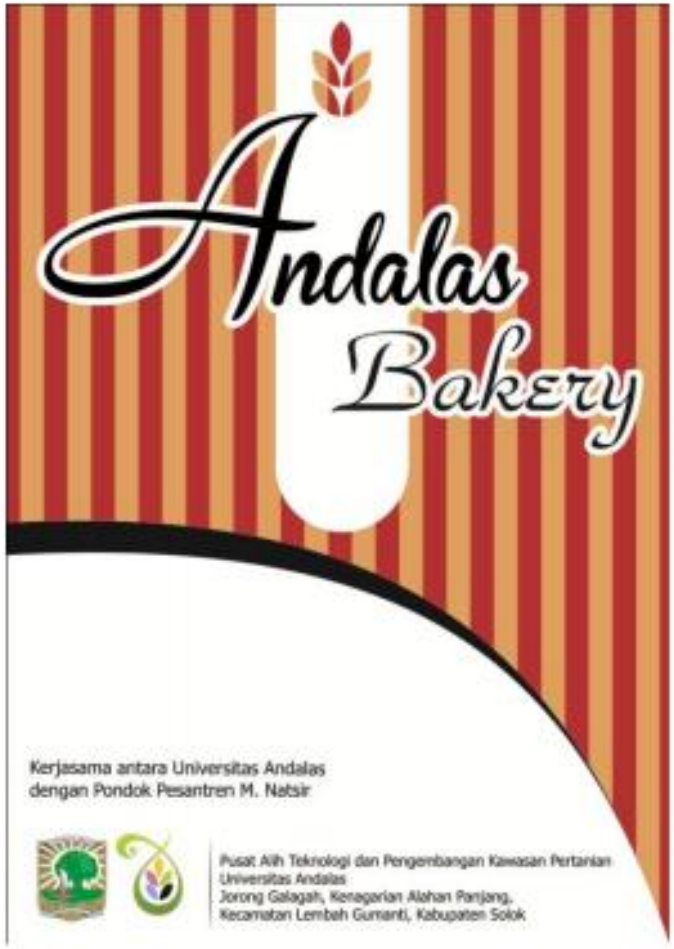
COMMUNITY LEARNING AND ACTION CENTER (CLAC)
ANDALAS UNIVERSITY in Cooperation with Local School)


TROPICAL WHEAT FIELD AT
ANDALAS UNIVERSITY CLAC



TROPICAL WHEAT FIELD
AT THE ANDALAS UNIVERSITY CLAC

BREAD MADE FROM LOCAL TROPICAL WHEAT



WHEAT PORRIDGE
(Sweet)

TRAINING FOR LOCAL WOMEN

INTER-DISCIPLINARY RESEARCH FOR SUSTAINABLE SOLUTIONS

FISH FEED PRODUCTION USING LOCALLY AVAILABLE MATERIALS

FISH FEED PRODUCTION USING LOCALLY AVAILABLE MATERIALS

PRACTICING SUSTAINABILITY SCIENCE WITH LOCAL COMMUNITY AND LOCAL GOVERNMENT STAFF

PAKAN IKAN
Andalas
ANDALAS

FISH FEED

Andalas

Diproduksi atas
Kerjasama PATPKP
dengan Pondok Pesantren Dr. M. Natsir
081363465665

ORGANIC WASTE MATERIAL DECOMPOSITION → ORGANIC FERTILIZER

CATTLE FATTENING

MUSHROOM CULTURE

PREPARE LOGS FOR MUSHROOM CULTURE

SOIL BIOREMEDIATION USING WHEAT STRAW

NURSERY OF FOREST AND PLANTATION SEEDLINGS


Pusat Alih Teknologi
dan Pengembangan Kawasan Pertanian
Universitas Andalas
Kerjasama Universitas Andalas dengan Pondok Pesantren Dr. M. Natsir
Jorong Galagah, Kenagarian Alahan Panjang, Kecamatan Lembah Gumanti, Kabupaten Solok


Pusat Alih Teknologi
dan Pengembangan Kawasan Pertanian
Universitas Andalas

THANK YOU