"SYMPOSIUM ON PEACEFUL USES OF NUCLEAR SCIENCE AND TECHNOLOGY: TOWARDS THE 2015 NPT REVIEW CONFERENCE AND BEYOND"

VIENNA, 24 February 2015

"Nuclear Application in Food and Agriculture"

Indonesia's experience in technology development and deployment

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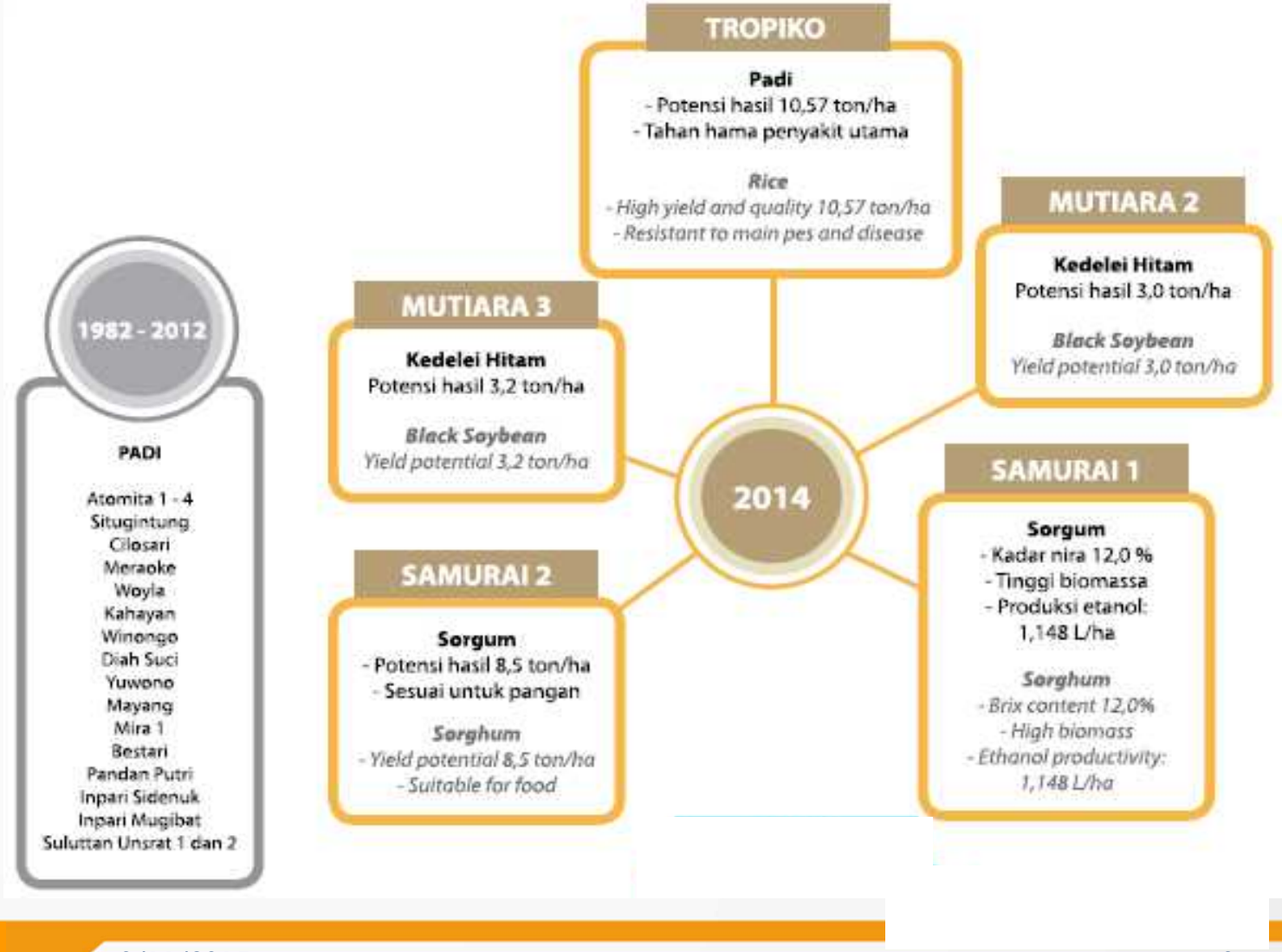
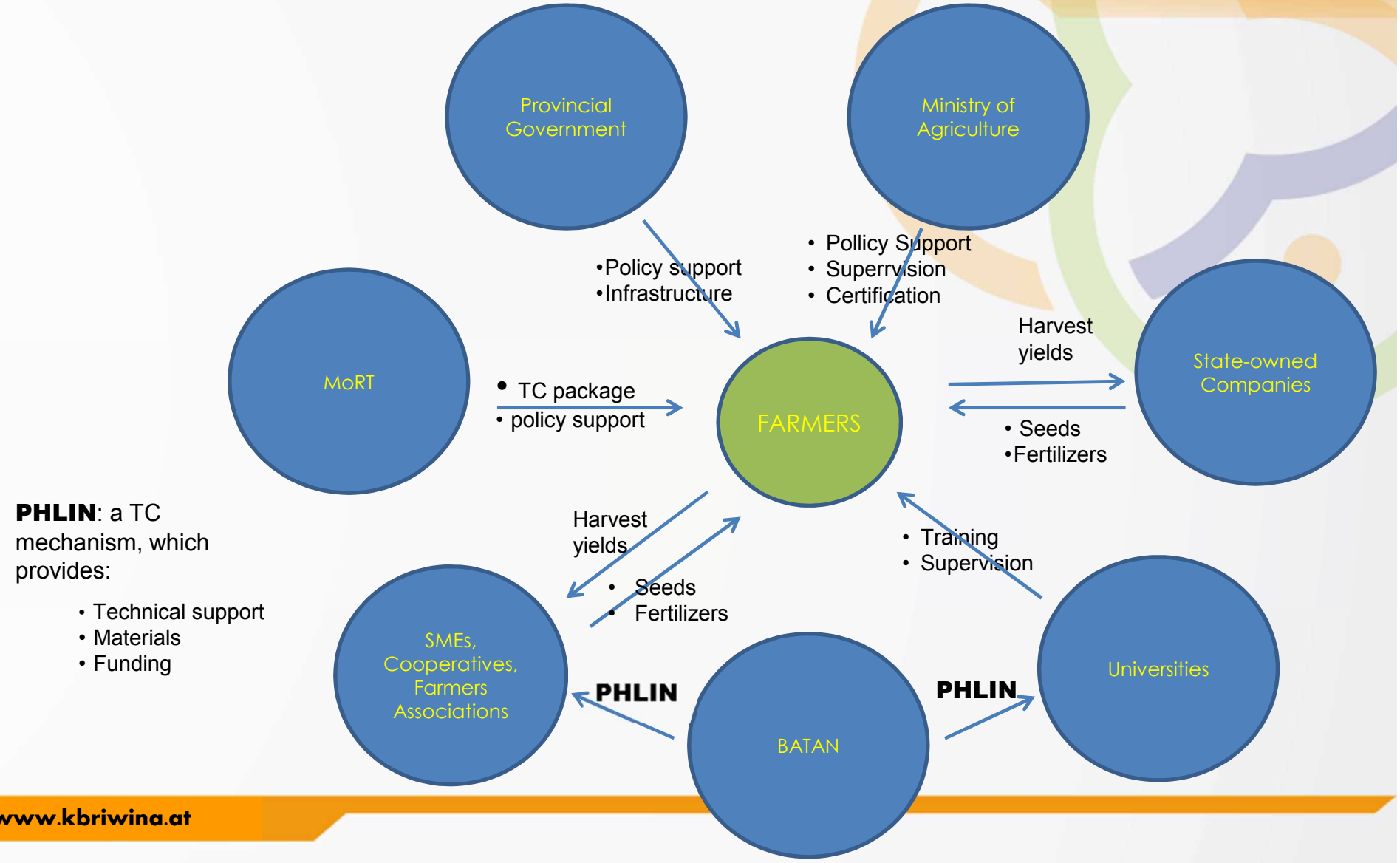
Food and Agriculture, the Role of Nuclear Science and Technology

- With a total population of over 240 million, food and agriculture is one of the highest priorities in Indonesia's development agenda.
- The challenges in this development area include *shrinking farmland*, *soil degradation*, *excessive use of fertilizers*, *small farmers*, *water scarcity* and other *impacts of climate change*, as well as *food diversity* (rice remains the main staple)
- Indonesia strives to develop and utilize science and technology to meet those challenges, improve *productivity*, and maintain the environment.
- Nuclear science and technology has played an important role in improving productivity in agriculture and improving food quality and safety. These include:
  - Mutation breeding to produce superior food crop varieties
  - Efficient use of fertilizers
  - Environment friendly pest control
  - Plant growth promoters
  - Animal feed formulation
  - Animal production
  - Food irradiation (quality and safety)

Development:
Over 30 years of continuing work in mutation breeding



Deployment (resource mobilization): Synergy and Partnership in Providing Integrated Support to Rice Farmers



PHLIN: a TC mechanism, which provides:

- Technical support
- Materials
- Funding

TANGIBLE SOCIO-ECONOMIC IMPACT

Indonesia: Plant Breeding Group, Centre for Isotopes and Radiation Application, National Nuclear Energy Agency, BATAN

Twenty mutant rice varieties have been released by the Plant Breeding Group. This represents 10% of the total rice varieties registered in the country, and thus has a major positive socio-economic impact.

Total income from one top mutant rice variety is estimated at US $2 billion. Hundreds of thousands of farmers in Indonesia and millions of Indonesian citizens have benefited from the release of mutant varieties.

Gaining through sharing and cooperation

Dua orang Myanmar yang disponsori oleh IAEA sedang mengikuti pelatihan pemuliaan mutasi tanaman di PAIR-BATAN selama 2 bulan.

Two IAEA fellows from Myanmar attending training course on Plant Mutation Breeding at CIRA-BATAN for the duration of 2 months.

Perwakilan dari IAEA meninjau evaluasi galur mutan sorgum di lahan masam di Bogor (IAEA CRP Project No.16947).

IAEA representatives visited the evaluation of sorghum mutant lines in acid soil in Bogor (IAEA CRP Project No.16947).

Penjelasan kepada peneliti dari Burkina Faso (Afrika Barat) tentang bagaimana cara kerja iradiator gamma.

Explanation to IAEA fellow from Burkina Faso (West Africa) about how gamma irradiator is working.

Pengantar kesehatan dan keselamatan di tempat kerja untuk rekan-rekan dari Myanmar.

Introduction to health and safety at work for fellows from Myanmar.

"The designation of BATAN as an IAEA Collaborating Centre recognises both its significant achievements in this field, as well as the close and valuable cooperation between BATAN and the IAEA. This will help build capacity and expertise in Indonesia, the region and beyond." (Yukiya Amano, on the designation of BATAN as an IAEA Collaborating Centre for industrial applications of NST, Jakarta 22-23 January 2015)

"Indonesia is not only a recipient to the IAEA Technical Cooperation Program but is also an active contributor to the program and other IAEA PUI activities" (Yukiya Amano, on meeting with ministers and the Speaker of the Parliament, Jakarta 22-23 January 2015)

INDONESIA'S APPROACH FOR SUSTAINABLE TECHNOLOGY DEVELOPMENT AND DEPLOYMENT PROGRAMME

- **Continuing support and incentives for research**
- **Establishment of national programmatic and institutional framework for coordination and partnership (national TC mechanism)**
- **Establishment of a programmatic framework for international cooperation:**
  - **has signed and employed the IAEA CPF as a platform for the development of efficient and effective IAEA TC National Programmes / Projects (positioning IAEA TC within the framework of national development programme). Has had 3 CPF signed: CPF 2001-2006 (revised in 2004), CPF 2008 – 2012, and CPF 2013 – 2017**
  - **Others: MOU with FAO, FNCA, bilaterals**

Identified Challenges and Needs

- Ecosystem-related : *shrinking farmland, soil degradation, small farmers, water scarcity* and other *impacts of climate change*.
- Technology-related: post harvest, beyond mutation breeding, economics
- Impact: needs for greater uptake and impact
- Public understanding and acceptance

A Better Diet for People with Weak Immune Systems

Ways to mobilize resources …

- Create platforms for synergy:

  e.g. PHLIN as a sampel case => needs incentives programmes

- Create opportunities for investment and businesses:

  e.g. Seeds and fertilizers producers, food irradiation
  => needs supports for startups and entrepreneurs

- (Explore) potential (funding) resources:
  - National level : governmental programmes, business ventures, CSR
  - Global level : IAEA TC, PUI, GEF, investment institutions, philantropists

  => "International Conference on Peaceful Uses of Nuclear Science and Technology 2016: taking stock, promoting technical cooperation, investment and business opportunities"

Preserving nature

Creating jobs

Leveraging welfare

Terima Kasih