**Title of project, programme or portfolio** | Implementing Integrated cropping-livestock production systems for enhancing soil carbon sequestration, reducing greenhouse gas emissions and minimizing water quality degradation

**Objective(s)** | To develop strategies through research and development programmes in Argentina, Brazil, China, Ethiopia, India, Indonesia, Kenya, Uganda and Uruguay for reducing greenhouse gas emissions, improve carbon sequestration and water quality using integrated cropping-livestock systems. Field studies established in different agro eco-regions to: (a) determine greenhouse gas (GHG) emissions and soil carbon sequestration in integrated cropping-livestock systems and (b) assess potential impacts of integrated cropping-livestock systems on downstream water quality. These activities support the FAO/IAEA research project on “Optimizing resource use efficiency in integrated cropping-livestock production systems”

**Countries and/or regions supported** | Countries: Argentina, Brazil, China, France, India, Indonesia, Kenya, Nigeria, Uganda, United States of America and Uruguay.

**Sectors addressed** | Agriculture

**Timing and duration** | 5 years starting 2013

**Contact person (name, email address and telephone number)** | m.nguyen@iaea.org, +43 1 2600 21648

**Planning, prioritizing and implementing adaptation actions identified in national/subnational plans and strategies, national communications, NAPAs etc.** | ![Yes](#) ![No](#) Any details: Preliminary discussion held through consultant meeting of experts from the regions. A coordination meeting was also held to discuss the current national issues on and the role of integrated cropping livestock systems for reducing risk of food insecurity and rural poverty

**Impact and vulnerability assessments (including of financial needs)** | ![Yes](#) ![No](#) Any details: Information generated from this research and development programme is useful in the development of integrated cropping-livestock management systems that help farmers to improve resource use efficiency, to enhance soil carbon sequestration, soil fertility and soil quality, to reduce GHG emissions and to improve water quality. Farmers benefit from increased income as a result of increased production and improved resource use efficiency (including water and fertilizer)

**Strengthening institutional capacities (of national institutions) and creating enabling environments** | ![Yes](#) ![No](#) Any details: R&D, networking and training on soil, water and nutrient management in integrated cropping and livestock systems.

**Economic diversification** | ![Yes](#) ![No](#) Any details: A number of countries from Asia pacific, Africa and Latin America will benefit from the outcomes of the project as a result of increased income from these production systems
<table>
<thead>
<tr>
<th>Topic</th>
<th>Yes/No Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate change related disaster risk reduction strategies, early warning systems, risk management</td>
<td>The project contributes to climate change related risk management in crop and livestock production</td>
</tr>
<tr>
<td>Understanding, coordinating and cooperating on climate related displacement</td>
<td>Any details:</td>
</tr>
<tr>
<td>Technology transfer, research and development</td>
<td>Best fit soil, water and nutrient management practices introduced in participating countries</td>
</tr>
<tr>
<td>Education and public awareness</td>
<td>Scientific publications and information brochures available</td>
</tr>
<tr>
<td>Systematic observation for climate data collection, archiving, analysis and modelling</td>
<td>Data sets are being assembled and used to identify key factors affecting greenhouse gas emissions and carbon sequestration in integrated cropping-livestock systems</td>
</tr>
</tbody>
</table>

**Principles guiding support**

The project benefits both men and women, as project participation ensures gender balance.

**Resource(s) of support**

- **Main source(s) of financial support, including volume/amount disbursed (provided by the reporting institution/agency)**
  - Regular Budget of the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (FAO and IAEA RB)
- **Other source(s) of financial support, including volume (includes support provided by collaborating donor agencies/countries, as well as beneficiaries)**
  - IAEA Technical Cooperation Department support through national and regional projects.
- **Methods of delivery (e.g. direct access, concessional loans, etc.)**
  - Research contracts and agreements through Chief Scientific Investigator in participating countries

The overall objective of the CRP is to enhance food security and rural livelihoods by improving resource use efficiency and sustainability of integrated crop-livestock systems under a changing climate and the specific objectives are to:

1. Optimize water and nutrient use efficiency in integrated crop-livestock production systems,
2. Identify the potential for improving soil quality and fertility in integrated crop-livestock systems.

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1 For details, please see paragraph 12 of decision 1/CP.16 <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2>.
3. assess the influence of crop-livestock systems on GHG emissions, soil carbon sequestration and water quality,
4. assess socio-economic and environmental benefits of crop-livestock systems,
5. strengthen the capacity of Member States to use isotopic and nuclear techniques as tools for improving the management of crop-livestock systems, and
6. develop soil, water and nutrient management options in integrated crop-livestock systems for potential adoption by farmers.

<table>
<thead>
<tr>
<th>Other types of support, including technology transfer and capacity building</th>
<th>Protocols and guidelines from SWMCN Section of the Joint FAO/IAEA Division for Food and Agriculture will be developed and available for participating countries</th>
</tr>
</thead>
</table>

### Key stakeholders

**Beneficiaries (specify their number and nature, e.g. national / subnational level, institution, local authorities, civil society groups, vulnerable communities, etc.)**

The project outputs will benefit national agricultural research systems and extension services (NARS); and farmers who will adopt these packages which have been adapted to various agro-climatic zones.

1. Ricardo Sager (Gerencia de Gestión del Desarrollo Científico y Tecnológico, Argentina)
2. Jefferson Dieckow (Federal University of Paraná, Brazil)
3. Mannu Babu (Tamilnadu Veterinary and Animal Sciences University, India)
4. Setiyo Hadi Waluyo (National Nuclear Energy Agency, Indonesia)
5. Yong Li (Chinese Academy of Agricultural Sciences, China)
6. Antony Esilaba (Kenya Agricultural Research Institute, Kenya)
7. Bernard Vanlauwe (International Institute of Tropical Agriculture, Nigeria)
8. Carlos Perdoma (Universidad de la República, Uruguay)
9. Abad Chabbi (INRA France)

### Progress to date

Progress, including results achieved so far and how progress is monitored and evaluated (How does the current situation differ from the situation present before support was given – i.e. has the action been effective and how?)

The project initiated in July 2013.

Best practices and lessons learned (including barriers to effective delivery of support; ways of enhancing coherence and synergy across levels)

As part of the project farmer field training provided in participating countries

Other relevant information (including links to publications, documents, webpages, progress reports, videos etc.)

http://www-naweb.iaea.org/nafa/swmn/index.html

### Further Engagement in the Work of the Adaptation Committee

Would your organization be interested in continuing to engage in initiatives led by the Adaptation Committee? (Please see AC work plan for reference) If so, please provide details of a

Name of contact person:
Email address:
| contact person. | Please provide details of other organizations active in your region, which could contribute to the work of the AC. |