This working paper outlines a set of indicators at the outcome and impact level for the agriculture and rural development sector. It does not focus on implementation (e.g. output level indicators such as irrigation of crops), or indicators at the global level (e.g. economic growth and poverty reduction) but aims to improve the development of indicators between these two levels (i.e. the 'missing middle').

It is hoped, by setting out a clear set of indicators, that this work can be used to guide the development and monitoring of programming level tools. These indicators should also increase our understanding of the wider impact of development assistance.

This work builds upon existing international best practices (e.g. GDPRD key indicators).
AGRICULTURE & RURAL DEVELOPMENT:
OUTCOME AND IMPACT INDICATORS

Introduction

This short paper outlines a key set of effects and indicators covering expected outcomes and impacts of support to the agriculture and rural development sector. It is designed to assist country teams to develop a set of indicators for the programming level and guide the production of documents such as Country Strategy Papers (CSP). It also aims to fill, as much as possible, the ‘missing middle’ between implementation indicators (e.g. irrigation of crops) and global impact indicators (e.g. poverty reduction).

Methodology

This paper is based on intervention logic that outlines a chain of expected effects (outputs, outcomes and impacts) for a successful intervention. For each outcome and specific impact, a set of indicators has been identified that can measure their achievement. A full set of effects is outlined in the intervention logic diagram on page 4 and the indicators are summarised in Annex A.

For full details on the methodology used for this working paper, please see the ‘methodological approach' paper.

The focus of the intervention logic is on the agricultural sector. However, the intervention logic also covers the main effects required in the non-farm rural economy for development to take place.

The 2008 World Development Report identified three different types of economies for rural development economies, each requiring different development paths:

**Agriculture-based economies** (e.g. sub-Saharan countries): need to use agriculture as their basis for economic growth by improving smallholder competitiveness in medium and higher potential areas, while simultaneously ensuring livelihoods and food security;

**Transforming economies** (e.g. South/East Asia, Middle East and North Africa countries): require comprehensive approaches that pursue multiple pathways out of poverty (e.g. by shifting to high-value agriculture and decentralising non-farm economic activities to rural areas); and

**Urban-based economies** (e.g. Latin America and Central Asia countries): need to focus on linking farmers to modern food markets and booming agricultural sub-sectors, or sustainable provision of environmental services.

The indicators in this working paper cover all three types of rural development economies. However, when developing intervention logics for specific countries the focus will depend on what type of rural economy the country is based on.

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1 As outlined in Tools and Methods Series, Reference Document No.5: Sector Approaches in Agriculture and Rural Development (page.9)
Where possible, indicators have been taken from the Global Donor Platform for Rural Development (GDPRD) priority and core indicator list. The GDPRD is aiming for all countries to be able to at least report on the nineteen indicators outlined in their priority list.

Output Clusters

Support for agriculture and rural development has been arranged into two output cluster areas. It should be noted that development in agriculture and rural development is mostly based on private sector activities. Therefore, the role of the public sector is essentially to ensure provision of key public goods and to create a conducive economic and regulatory environment for private business. Output clusters cover products resulting from development interventions:

Provision of Key Public Goods

This includes six sub-cluster areas:

1. Infrastructure: "building of roads to aid the trade of goods"
2. Water: "irrigation of crops and animal feed"
3. Education: "to build skills of rural population to enable better understanding of agriculture and to gain access to other sectors of the economy"
4. Health Care: "enhanced health for rural population"
5. Animal/Plant Health Control: "improved vaccination, disease monitoring and control for animal and plants"
6. Research & Development "development of improved inputs for agriculture, such as seeds and fertilisers"

Economic and Regulatory Environment

This includes two sub-cluster areas:

1. Stable/favourable macro-economic policy environment for rural development:
   - tax
   - customs
   - inflation
   - exchange rates
2. Streamlined/favourable regulatory framework environment to encourage rural development:
   - business investment climate
   - property/land rights
   - food quality standards
   - environmental standards

2 For full details, see the GDPRD 'Tracking outcomes in agriculture and rural development in less-than-ideal conditions, a sourcebook of indicators for monitoring and evaluation'. Priority indicators are highlighted in the text with italics.
Inputs: financial, human and material resources etc. Activities: funding, planning, monitoring, technical assistance, construction etc
Outcomes

Outcomes relate to the likely or achieved short-term and medium-term effects of an intervention’s outputs:

Mitigating Agricultural Price Volatility

1. Support for consumers vulnerable to short-term food price changes
   Example: Percentage of vulnerable population with access to food aid, cash transfers, or work fare programmes

2. Support for farmers vulnerable to short-term food price changes
   Examples: Percentage (total value) of food staples covered by long term fixed price contracts
   Percentage of the rural population who are eligible to obtain a business loan
   Percentage of rural businesses (farm/non-farm) that have risk insurance policies
   Storage facility capacity in months and key food staples

Improved Access: Markets

3. Access to road transportation
   Examples: Change (percentage) in unit cost of transportation of agricultural products

Improved Access: Farm Inputs

4. Access to land
   Examples: Percentage of land area for which there is a legally recognized form of land tenure
   Percentage of agricultural households that have legally recognised rights to land

5. Access to water
   Examples: Irrigated land as percentage of crop land
   Increase (volume) in use of rain harvesting

6. Access to seeds and fertilisers
   Examples: Fertiliser consumption (100gms per hectare of arable land)
   Production and cost of improved seedlings
   Use of improved seedlings

7. Access to improved breeds of animals/fish
   Example: Percentage coverage/change in improved breed stock

Improved Access: Information Services

8. Access to extension services
   Example: Percentage of farmers that have knowledge, use advice and are satisfied with specific knowledge being disseminated by the extension system

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5 Global Donor Platform for Rural Development (GDPRD) core indicator 45. Identical to example provided for indicator 8.
4 Identical to example provided for indicator 8.
3 GDPRD core indicator 15
6 GDPRD priority indicator 19
7 GDPRD core indicator 83
8 GDPRD priority indicator 13
9 GDPRD core indicator 51
9. Access to information on markets
   Example: Percentage of farmers aware of key market information

**Improved Access: Capital**

10. Availability of credit
    Examples: \textit{Percentage of the rural population using financial services of formal banking institutions}^{10}
    \textit{Percentage of rural population using non-bank financial services}^{11} (e.g. micro-credit)
    \textit{Percentage of the rural population who are eligible to obtain a business loan}^{12}
    \textit{Percentage of rural businesses (farm/non-farm) that have risk insurance policies}^{13}

11. Investment in rural areas
    Examples: \textit{Percentage increase in private sector investments in agriculture}^{14}
    \textit{Percentage increase in private sector investments in rural non-farm activities}

12. Establishing a rural business
    Example: Average time and cost for registering a rural business

**Better Management of Natural Resources**

13. Preservation of natural resources
    Example: \textit{Proportion (percentage) of land area formally established as protected area}^{15}
    \textit{Proportion (percentage) of seas/lakes formally established as protected area}

14. Sustainable management practices
    Examples: \textit{Knowledge/use of sustainable crop production practices, technologies and inputs}^{16} (e.g. conservation tillage and irrigation management)
    \textit{Capture fish production as a percentage of fish stock}^{17}
    \textit{Area of forest under sustainable forest management (hares)}^{18}
    \textit{Levels of agro-chemical pollution}
    \textit{Rates of pesticide poisoning illnesses and deaths}

15. Environmental services
    Examples: \textit{Growth/value of rural businesses linked to environmental services} (e.g. value of services from forests^{19}, eco-tourism)
    \textit{Value of carbon trading schemes}

**Efficient Employment: Non-Farm**

16. Non-farm employment
    Examples: \textit{Percentage of rural labour force employed in non-farm activities}^{20}

**Efficient Employment: Agricultural Labour**

17. Agriculture labour employment
    Examples: \textit{Percentage of rural labour force employed in agriculture}^{21}
    \textit{Percentage of the labour force underemployed or unemployed}^{22} (in rural areas)

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^{10} GDPRD priority indicator 11
^{11} GDPRD core indicator 49
^{12} GDPRD core indicator 45. Identical to example provided for indicator 2.
^{13} Identical to example provided for indicator 2.
^{14} GDPRD core indicator 68
^{15} GDPRD priority indicator 17
^{16} GDPRD core indicator 21
^{17} GDPRD priority indicator 9
^{18} GDPRD core indicator 40
^{19} GDPRD core indicator 39
^{20} GDPRD core indicator 17
^{21} GDPRD core indicator 16
^{22} GDPRD core indicator 18
Increased Productivity

18. Land productivity
   Examples: Change (percentage) in yields of major crops of the country\textsuperscript{23}
   Annual growth (percentage) in value added in the livestock sector\textsuperscript{24}
   Yield gap between farmers' yields and on-station yields for major crops of the country\textsuperscript{25}
   Percentage increase in yield per livestock unit\textsuperscript{26}
   Water use per unit of aquaculture production\textsuperscript{27}

19. Labour productivity
   Example: Agriculture value added per worker

20. Capital productivity
   Example: Tractors per 100sq km of arable land
   Percentage of farmers who are members of community/producer organisations\textsuperscript{28}

Increased Production

21. Production
   Examples: Food production index\textsuperscript{29}
   Percentage of total land area
   under permanent crops\textsuperscript{30}
   Annual change (percentage)
   in production from aquaculture farms\textsuperscript{31}
   Annual change (percentage)
   in timber production

22. Type of production/diversification
   Example: Increase in production of high-value agricultural products

Improved quality of products

23. International marketing standards
   Examples: Value/number of agricultural products that meet minimum international marketing standards

Specific Impact

Specific impacts cover positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended:

Improved Rural Business Income

24. Agricultural prices
   Examples: Producer Price Index for food items\textsuperscript{32}
   Value at farm-gate

\textsuperscript{23} GDPRD priority indicator 7
\textsuperscript{24} GDPRD priority indicator 8
\textsuperscript{25} GDPRD core indicator 23. This is sometimes referred to as the 'yield gap', which looks at the difference between actually productivity and potential productivity.
\textsuperscript{26} GDPRD core indicator 28
\textsuperscript{27} GDPRD core indicator 31
\textsuperscript{28} GDPRD core indicator 15
\textsuperscript{29} GDPRD core indicator 4
\textsuperscript{30} GDPRD core indicator 24
\textsuperscript{31} GDPRD core indicator 35
\textsuperscript{32} GDPRD core indicator 13
25. Growth in agricultural businesses
   Examples: Gap between value/number of agricultural businesses starting up and going bankrupt
   Change (percentage) in sales/turnovers of agro-enterprises and community/producer organisations
   Annual growth (percentage) in agricultural added value

26. Growth in rural non-farm businesses
   Examples: Gap between value/number of rural non-farm businesses starting up and going bankrupt
   Change (percentage) in sales/turnovers of rural non-farm businesses

Greater Affordability of and Subsistence in Food

27. Affordability of food
   Examples: Consumer Price Index for food items
   Percentage of average household income spent on food items

28. Subsistence in food
   Example: Percentage of (annual/monthly) household foods needs covered by subsistence farming

Increased Trade

29. Agricultural trade
   Examples: Change in agricultural trade balance
   Agricultural exports as a percentage of total value added in agriculture sector
   Change in value of agricultural trade
   Change in volume of agricultural trade

30. Rural non-farm trade
   Examples: Change rural non-farm trade balance
   Change in value of rural non-farm trade
   Change in volume of rural non-farm trade

Intermediate Impacts

Intermediate impacts are similar to specific impact but are longer-term in nature and are the last cause and effect chain level that can be monitored effectively and at the same time demonstrative sufficient attribution to the output clusters:

Higher Rural Income

31. Rural income
   Examples: Percentage change in proportion of rural population below $1 (purchasing power parity) per day or below national poverty line
   Rural poor as a proportion of the total poor population
   Annual growth rate (percentage) of household income in rural areas from non-agricultural activity

Greater Food Security

32. Undernourishment
   Examples: Prevalence (percentage) of underweight children under five years of age in rural areas

37 GDPRD priority indicator 14
38 GDPRD priority indicator 5
39 GDPRD core indicator 10
35 GDPRD core indicator 11
37 GDPRD core indicator 8
38 GDPRD core indicator 6
40 GDPRD core indicator 20
40 GDPRD priority indicator 3
Proportion of under-nourished rural population\textsuperscript{41}

**Improved Environmental Sustainability**

33. Land sustainability
   Example: \textit{Change (percentage) in soil loss from watersheds}\textsuperscript{42}
   \textit{Proportion (percentage) of land area covered by forest}\textsuperscript{43}
   Rate of deforestation (percentage)\textsuperscript{44}

34. Sustainable extraction of water
   Example: Annual extraction from surface and ground water in relation to its minimum annual recharge (i.e. water balance sheet)
   \textit{Withdrawal of water for agricultural as a percentage of total freshwater withdrawal}\textsuperscript{45}

35. Adapting to climate change
   Example: \textit{Change (percentage) of farms under risk of flood/drought}\textsuperscript{46}

**Global Impacts**

Finally, the effects of support for agriculture and rural development should contribute to the longer term global impacts of social development, economic growth and poverty reduction. However, due to the complexity of their achievement and the numerous factors influencing them, it is not possible to draw a direct cause and effect link between them and agriculture and rural development. As a outcome, no agriculture and rural development related indicators have been identified for this level.
### Annex A: List of Key Indicators for Agriculture and Rural Development

<table>
<thead>
<tr>
<th>Price Volatility Outcomes</th>
<th>Production Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Availability to food aid, cash transfers, or work fare programmes</td>
<td>- Food production index; land area under permanent crops; aquaculture/timber production</td>
</tr>
<tr>
<td>2. Farmer vulnerability to short-term price changes</td>
<td>22. Type of Production/diversification</td>
</tr>
<tr>
<td>- Food staples covered by long-term fixed price contracts; eligibility to business loan and risk insurance coverage; storage facility capacity in months and key food staples</td>
<td>- Increase in production of high-value agriculture products</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Improved Access Outcomes</th>
<th>Quality Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Access to road transportation</td>
<td>23. International marketing standards</td>
</tr>
<tr>
<td>- Unit cost for transportation of agricultural products</td>
<td>- Value/number of agricultural products that meet minimum international marketing standards</td>
</tr>
<tr>
<td>4. Access to land</td>
<td></td>
</tr>
<tr>
<td>- Land area/agricultural households where there is legally recognised land tenure</td>
<td></td>
</tr>
<tr>
<td>5. Access to water</td>
<td></td>
</tr>
<tr>
<td>- Irrigated land; use of rain harvesting</td>
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<tr>
<td>6. Access to seeds and fertilisers</td>
<td></td>
</tr>
<tr>
<td>- Fertiliser consumption; production, cost &amp; use of seeds</td>
<td></td>
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<tr>
<td>7. Access to improved breeds of animals/fish</td>
<td></td>
</tr>
<tr>
<td>- Percentage coverage/change in improved breed stock</td>
<td></td>
</tr>
<tr>
<td>8. Access to extension services</td>
<td></td>
</tr>
<tr>
<td>- Farmers that have knowledge, use advice &amp; are satisfied with extension services</td>
<td></td>
</tr>
<tr>
<td>9. Access to information on markets</td>
<td></td>
</tr>
<tr>
<td>- Percentage of farmers aware of key market information</td>
<td></td>
</tr>
<tr>
<td>10. Availability of credit</td>
<td></td>
</tr>
<tr>
<td>- Rural population using financial services (formal &amp; non-formal); are eligible for a business loan; that have risk insurance policies</td>
<td></td>
</tr>
<tr>
<td>11. Investment in rural areas</td>
<td></td>
</tr>
<tr>
<td>- Increase in private sector investments (agriculture &amp; non-farm)</td>
<td></td>
</tr>
<tr>
<td>12. Establishing a rural business</td>
<td></td>
</tr>
<tr>
<td>- Average time/cost in setting up a rural business</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Natural Resources Outcomes</th>
<th>Profitability Specific Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Land/sea/lake area established as a protected area</td>
<td>- Producer price index for food items; value at farm-gate</td>
</tr>
<tr>
<td>- Knowledge/use of sustainable crop practices, technologies and inputs; capture fish production as % of stock; area of sustainable forest management; levels of agro-chemical pollution; rates of pesticide poisoning</td>
<td>- Gap between start ups and bankruptcy; sales/turnovers; growth in agricultural added value</td>
</tr>
<tr>
<td>15. Environmental services</td>
<td>26. Growth in rural non-farm businesses</td>
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<tr>
<td>- Growth/value of rural environmental services; value of carbon trading schemes</td>
<td>- Gap between start ups and bankruptcy; sales/turnovers</td>
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<tr>
<th>Employment Outcomes</th>
<th>Affordability/Subsistence Specific Impacts</th>
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</thead>
<tbody>
<tr>
<td>16. Non-farm employment</td>
<td>27. Affordability of food</td>
</tr>
<tr>
<td>- Non-farm labour force</td>
<td>- Consumer price index for food; % of household income spent on food</td>
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<td>17. Agricultural Labour</td>
<td>28. Subsistence in food</td>
</tr>
<tr>
<td>- Agricultural labour force; rural labour force underemployed or unemployed</td>
<td>- Household food needs covered by subsistence farming</td>
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<table>
<thead>
<tr>
<th>Productivity Outcomes</th>
<th>Trade Specific Impacts</th>
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<tbody>
<tr>
<td>18. Land productivity</td>
<td>29. Agricultural trade</td>
</tr>
<tr>
<td>- Yields of major crops/livestock; yield gap; yield per livestock unit; water use per unit of aquaculture production</td>
<td>- Trade balance; exports as a % of total value added; value and volume of trade</td>
</tr>
<tr>
<td>19. Labour productivity</td>
<td>30. Rural non-farm trade</td>
</tr>
<tr>
<td>- Agricultural added value per worker</td>
<td>- Trade balance; value and volume of trade</td>
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<tr>
<td>20. Capital productivity</td>
<td></td>
</tr>
<tr>
<td>- Tractors per 100sq of arable land; Farmers who are members of collective organisations</td>
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<th>Rural Income Intermediate Impacts</th>
<th>Food Security Intermediate Impacts</th>
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<tr>
<td>31. Rural income</td>
<td>32. Undernourishment</td>
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<tr>
<td>- Rural population living below $1 day, or below national poverty line; rural poor as a % of total poor; growth in household from non-agricultural activity</td>
<td>- Prevalence of underweight children under 5 years old; undernourished rural population</td>
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<th>Environmental Sustainability Intermediate Impacts</th>
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<td>34. Sustainable extraction of water</td>
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<tr>
<td>- Soil loss from watersheds; land area covered by forest; deforestation</td>
<td>- Water balance sheet; water withdrawal for agriculture as a % of total freshwater withdrawal</td>
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<tr>
<td>35. Adapting to climate change</td>
<td>36. Farm under risk of flood/drought</td>
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