



LEARNING ABOUT
2 **a.1**
INDICATOR

SDG Indicator 2.a.1 - Agriculture Orientation Index

Lesson: Target 2.a and Indicator 2.a.1

Text-only version

The interactive version of this lesson is available free of charge at: <https://elearning.fao.org>



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Food and Agriculture
Organization of the
United Nations



working for Zero Hunger

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Target 2.a and Indicator 2.a.1

The scope of this lesson is to illustrate the SDG Indicator 2.a.1 - Agriculture Orientation Index, and how it helps on monitoring Target 2.a of the 2030 Development Agenda.

Learning objectives

At the end of this lesson, you will be able to:

- illustrate the Indicator 2.a.1;
- explain the rationale behind the Indicator;
- illustrate how the indicator has changed over time and across countries.

Target 2.a indicators

Through **Target 2.a** of SDGs, countries have committed to increase investment in order to **enhance agricultural productive capacity** in developing countries. Achievements under this target are monitored through **two indicators**, which concern the flows of the public financing to agriculture.

Indicator 2.a.1

The Agriculture Orientation Index (AOI) for Government Expenditures

It refers to the public domestic flows (government expenditure) in agriculture and compares the government's contribution to the agricultural sector with the sector's contribution to Gross Domestic Product (GDP). The **custodian agency** for this indicator is **FAO**.

Indicator 2.a.2

Total official flows (official development assistance¹ plus other official flows) to the agriculture sector. The **custodian agency** for this indicator is the Organization for Economic Co-operation and Development (**OECD**).

¹ **Development assistance** - Development assistance is essential in those countries (especially developing countries), where local governments' allocations to agriculture are not sufficient because of budget constraints. Donor countries and multilateral organization provide, for example, additional resources to build new expertise and capacity development, and humanitarian aid during crisis or pests.

Indicator 2.a.1

Let's focus on Indicator 2.a.1, which is the main topic of this course. The Indicator 2.a.1, the Agriculture Orientation Index for Government Expenditures (**AOI**), is a **currency-free measure**, calculated as the ratio of two shares:

These data are collected from countries by the FAO Statistics Division using an annual questionnaire, and supplemented by data collected by the International Monetary Fund (IMF) Statistics Department according to *Government Finance Statistics Manual 2014 (GFSM 2014)* methodology or compiled from official government publications and websites.

$$\text{AOI} = \frac{\text{Agriculture share of government expenditure}}{\text{Agriculture value added as share of GDP}} = \left(\frac{\text{Government expenditure on agriculture}}{\text{Total government expenditure}} \right) \left(\frac{\text{Agriculture value added}}{\text{GDP}} \right)$$

These data are collected from the **System of National Accounts**².

The data and the indicator are published in the [FAOSTAT Government Expenditure on Agriculture database www.fao.org/faostat/en/#data/IG](http://www.fao.org/faostat/en/#data/IG)

The AOI conveys the orientation of the government expenditure – current and capital outlays - to the agricultural sector compared to its contribution to the total economy. Let's see some examples:

Example

A government allocates 12% of its total expenditure to the agriculture sector, while the sector's contribution to the country's economy is 10%

² **The System of National Accounts:** The System of National Accounts (SNA) is an analytical framework that compiles national data from a mix of survey, census and administrative sources. The SNA is one of the building blocks of most country's economic statistics information, and essential to monitor economic trends, and establish fiscal and monetary policy.

AOI = 12%/10% = 1.2 →

AOI > 1 means **higher orientation** of the government expenditure to the agricultural sector compared to its contribution to the total economy.

A government allocates 5% of its total expenditure to the agriculture sector, while the sector's contribution to the country's economy is 10%

AOI = 5%/10% = 0.5 →

AOI < 1 means **lower orientation** of the government expenditure to the agricultural sector compared to its contribution to the total economy.

A government allocates 8% of its total expenditure to the agriculture sector and also the sector's contribution to the country's economy is 8%

AOI = 8%/8% = 1 →

AOI = 1 means **neutrality** in government's orientation to the agricultural sector.

The rationale behind Indicator 2.a.1

Government expenditure to agriculture and its corresponding programs are essential to **address market failures**, and to **improve equity** in redistributing income and other resources. A competitive market fails when the private sector is unable to reach an efficient outcome. In this case, government intervention is necessary to reach an efficient outcome, and can come in the form of taxation, subsidies, or regulation. The typical failures occur because of:

Negative externalities

A negative externality occurs when the activity of a producer (or consumer) imposes a cost on others who do not benefit from the activity, and cannot recoup the costs they incur.

For example, farmers that use chemical pesticides in producing irrigated rice create pollution in nearby rivers and streams. This imposes costs on downstream users of the water. Governments can intervene by taxing producers of chemical pesticides, imposing quotas on production, or subsidizing farmers to use non-chemical pesticides.

Positive externalities

A positive externality occurs when the activity of a producer (or consumer) provides benefits to others who do not pay any cost for the activity.

A classic example is the knowledge generated by research and development activities. In agriculture, consider a farmer that invests resources to develop or identify natural and low-costs mechanisms to contain a pest, or to irrigate

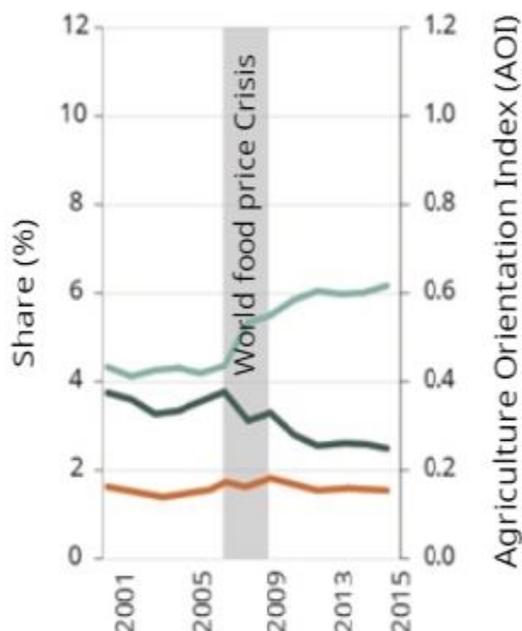
	<p>crops. This knowledge typically spreads and benefits other farmers, who have not had to invest their time or money. The result is a disincentive to invest in such research and development (R&D). Governments intervene by funding or subsidizing R&D activities of this type.</p>
<p>Public goods</p>	<p>Public goods are those goods where individuals cannot be excluded from consuming the good (non-excludability in consumption), and a new consumer does not impact the amount available for existing consumers (non-rivalry in consumption).</p> <p>Examples include the safety benefits of a policy force or armed forces, or the light emitted by lighthouses and street lights. Free-riding results, in which consumers benefit without payment, because they cannot be excluded from consumption. This results in under-investment, unless a government incurs the cost of provision funded through taxation. In agriculture, examples include the building of rural roads to help local farmers bring products to market.</p>
<p>Asymmetric information</p>	<p>Asymmetric information entails that the consumer and producer of a good service do not both have complete information.</p> <p><i>For example, when farmers need to borrow to sow a crop, neither they nor their lender knows for certain the outcome of the harvest, nor the natural or man-made conditions that may arise to adversely affect output or prices. In addition, the lender does not know the level of skill and effort a farmer will put in to growing a crop. This results in lower levels of lending, and higher risks in this particular sector. Typical solutions by government can include priority sector lending schemes managed by the Central Bank and Department of Finance, Ministry of Agriculture crop stock-piling and insurance programs, and producer subsidies.</i></p>

Income redistribution is also a key **rationale for government intervention**, even when markets are competitive and efficient. This equity-based rationale takes into account that not all individuals are born into the same situation. In some situations, people born into the poorest circumstances can face a life with inadequate resources for survival and food security. Government intervention is essential to redistribute resources and address this problem, as only governments have the authority by their citizens to enforce redistribution through tax and expenditure programs.

Indicator 2.a.1 trend

To better understand the AOI and its components, let's look at their trends.

World



AOI - It has declined from 0.38 to 0.21.

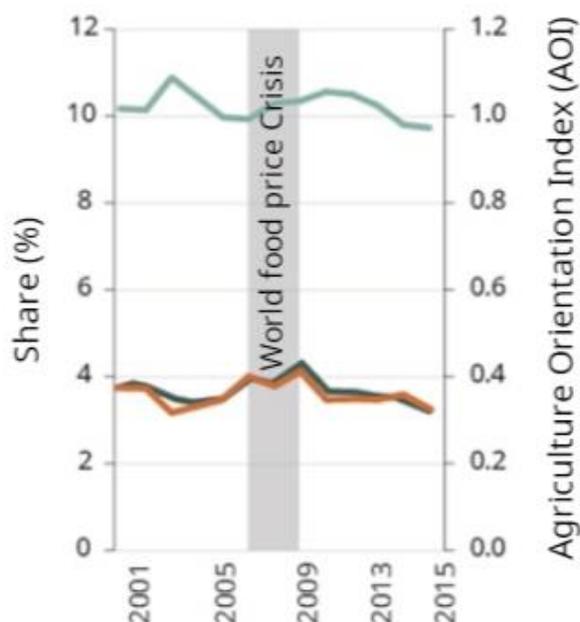
Agriculture share of government expenditure:

It has remained **stably** under 2% (from 1.6% to 1.4%).

Agriculture value added as share of GDP:

It has largely **increased** (from 4.1% to 6.8%).

Developing regions



AOI - It has decreased from 0.36 to 0.25, except during the food price crisis, when it reached a high of 0.40.

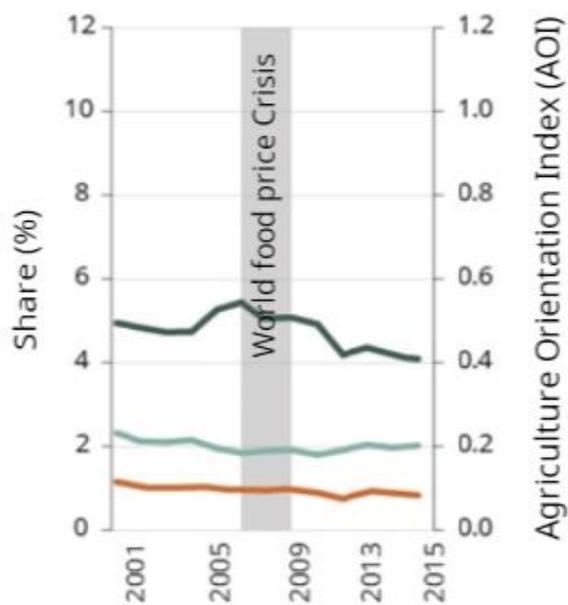
Agriculture share of government expenditure:

It has **decreased** (from 3.75 to 2.1, except during the food price crisis of 2006-2008).

Agriculture value added as share of GDP:

It has slightly **decreased** (from 10.3% to 8.3%).

Developed regions



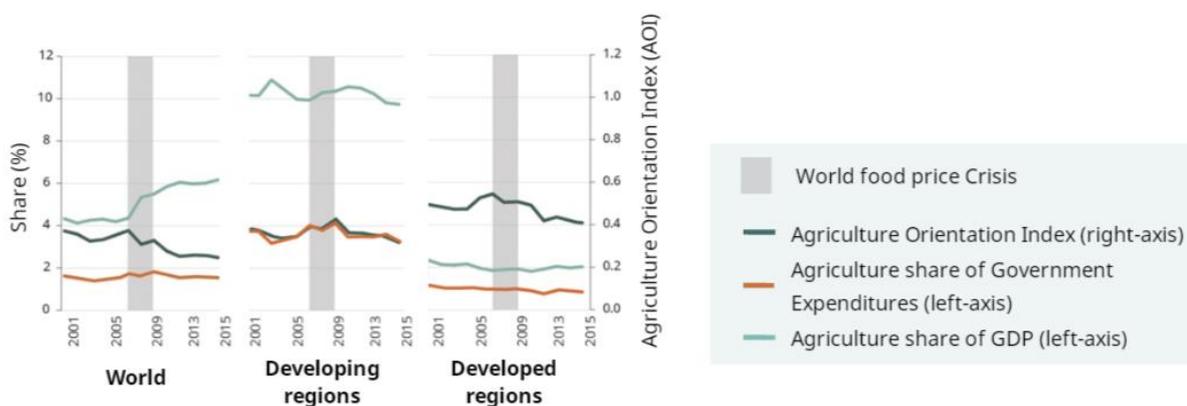
AOI - It has remained **stably** around 0.5 until 2009, and then slowly decreased to 0.32 in 2015.

Agriculture share of government

expenditure: It has slightly **decreased** from 1.2% to 0.7%.

Agriculture value added as share of GDP: It has remained **stably** around 2% (from 2.3% to 2.2%).

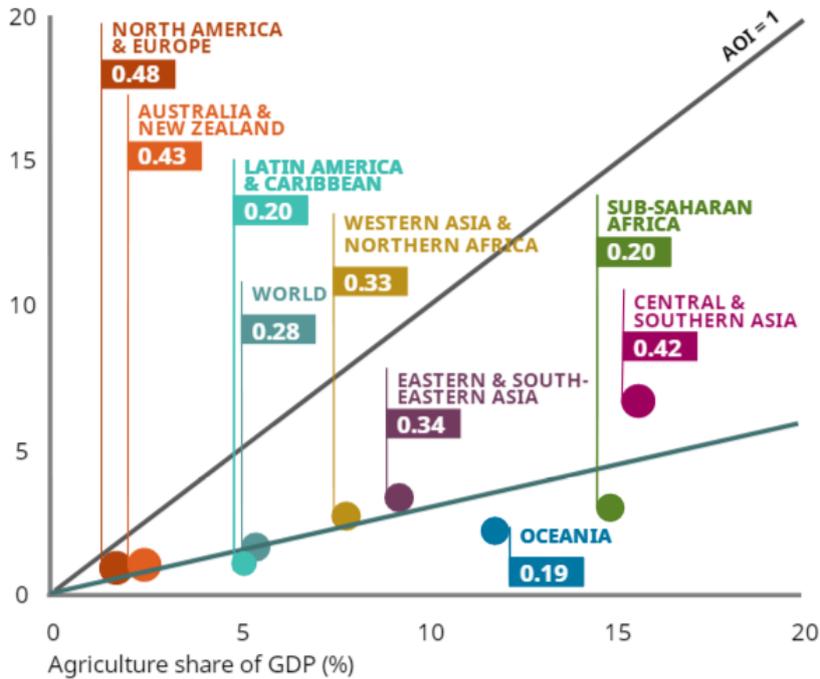
Trends of Agricultural Orientation Index



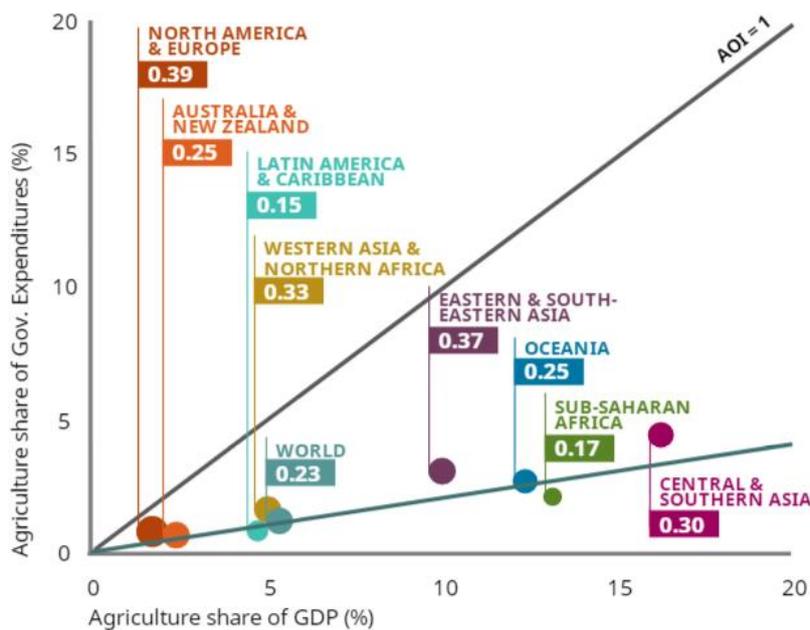
"Between 2001 and 2015, in the developed regions, the government contribution to the agriculture sector and the sector contribution to the total economy have been lower than the global level and the developing regions. Even though, government expenditure has been more agriculture orientated. The reason is the relatively small difference between the two components of the indicator. In the developing regions, instead, the agriculture share of government expenditure and the agriculture share of GDP have been higher than the global level and the developed regions. But, on the other hand, the difference between the two shares has been bigger than in the developed regions, and this is way the developing regions have experienced a smaller AOI, despite the higher government contribution to the sector."

It is also interesting to look at how the indicator has changed, on average, between 2008-2010 and 2013-2015. By comparing the two diagrams below, you can see that its average value has globally declined from 0.28 to 0.23.

2008-2010 average

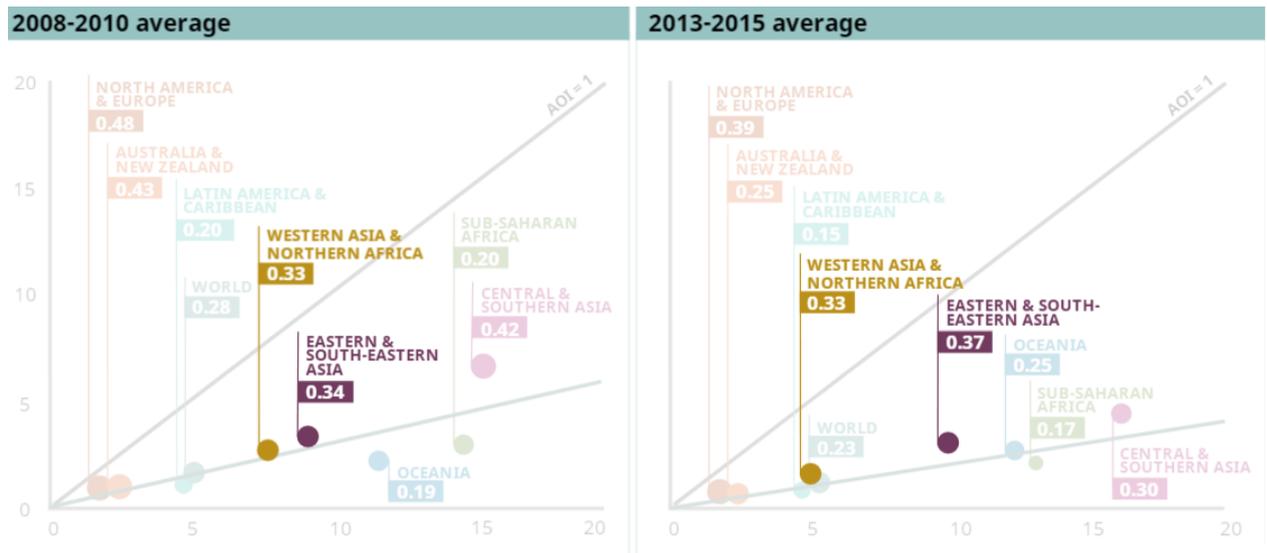


2013-2015 average

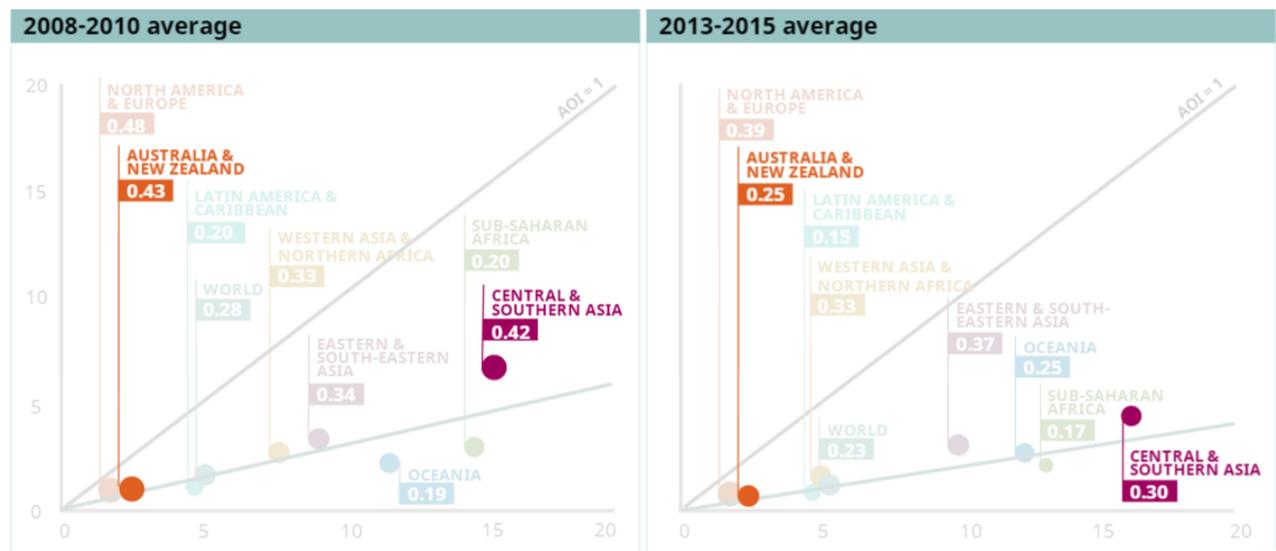


Please note that Latin American and the Caribbean, Oceania and Sub-Saharan Africa experienced an AOI lower than the global average.

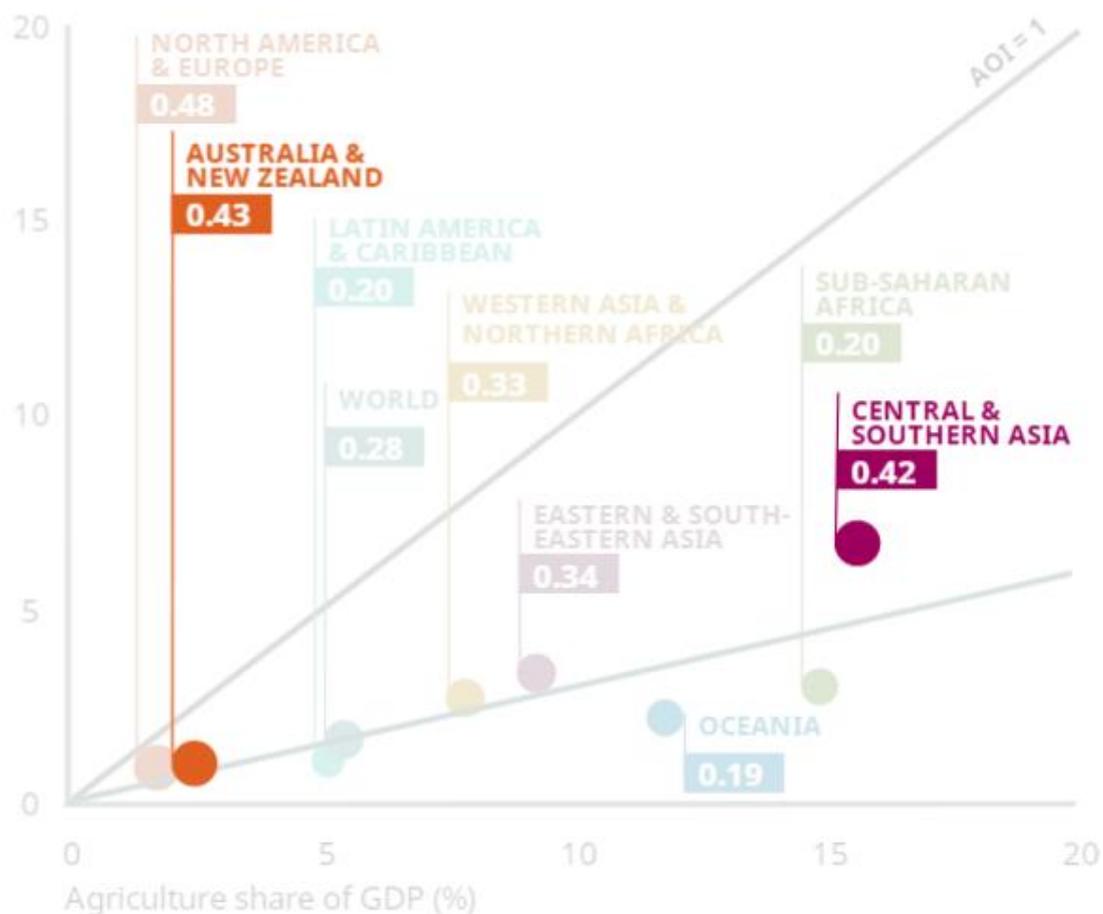
Regions that show an increasing AOI over the two periods include Western Asia and Northern Africa (from 0.33 to 0.38) and Eastern and South-eastern Asia (from 0.34 to 0.37). This resulted from a decreasing contribution of the agriculture sector to GDP, rather than an increase in agriculture's share of government expenditure.



Some regions experienced a decrease in the AOI, including, Central and Southern Asia (from 0.42 to 0.3), and Australia and New Zealand (from 0.43 to 0.25). This was the consequence of agriculture receiving a lower share of government expenditures.



Please note that the same AOI may result from completely different situations. Let's look for example at the period 2008-2010:



AOI for Australia & New Zealand 0.43

Agriculture share of government expenditure = 1%

Agriculture value added as share of GDP = 2.3%

AOI for Central & Southern Asia 0.42

Agriculture share of government expenditure = 6.6%

Agriculture value added as share of GDP = 15.7%

Even if the values reported for the agriculture share of government expenditure are different (6.6% of the government spending for Central & Southern Asia were addressed to the agriculture sector, while for Australia & New Zealand only 1%), the two regions have almost the same value of the AOI.

This is because, when compared with the sector's contribution to total economy, the government expenditures of both regions are equally oriented towards agriculture.

Summary

The Indicator 2.a.1 - the Agriculture Orientation Index (AOI) for Government Expenditures - compares the government's contribution to the agricultural sector with the sector's contribution to Gross Domestic Product (GDP). It is calculated as the ratio of two shares:

$$\text{AOI} = \frac{\text{Agriculture share of government expenditure}}{\text{Agriculture value added as share of GDP}}$$

The AOI conveys the orientation of the government expenditure to the agricultural sector compared to its contribution to the total economy:

- AOI >1 means higher orientation;
- AOI <1 means lower orientation;
- AOI = 1 means neutrality.

Government expenditure to agriculture and its programs are essential to address market failures, and to improve equity in redistributing income and other resources.

This lesson has illustrated how the indicator has changed over time and across countries.