

A guide for design and implementation of the UNEP country projects focusing on the rice sector¹

Draft for review

Objective

This short paper aims to provide a common framework for national research institutions to formulate a project proposal to UNEP agricultural country studies. A project proposal should contain a clear problem analysis (Step II. A) as discussed below. To provide a comprehensive picture of the overall process, this paper also covers the steps of solution analysis to complete the project design.

Contents of the study

I. Setting the stage

1. Sector

The study will analyze the domestic rice sector. Each country may articulate why the rice sector is important to its economy. Following criteria² could be used:

- The sector is important to the national economy and in particular in its contribution to export revenues.
- The sector relates directly or indirectly to major environmental media and natural resources.
- The sector relates directly or indirectly to important issues of equity and social well being.
- The sector has been, or might become, the subject of changes in the economic rules induced by trade-related policies.
- The sector is one with significant trade flows in both volume and financial terms and is experiencing changes in trade flows.
- The sector is one where one might expect, *a priori*, that there are important sustainability effects attributable to trade-related policies

2. Cross-sector analysis

The country may need to analyze, however, other relevant sectors. For example, an upstream industry/sector produces inputs to the rice sector. A downstream sector uses rice and rice products as inputs. Other related sectors are those that produce substitute goods (maize, for example) or complementary goods (those that are consumed along with rice).

If the rice sector has important cross sector impacts in the economy, researchers may choose to conduct general equilibrium analysis. If the rice sector can be analyzed in isolation from other sectors, partial equilibrium analysis may be suitable.

3. Focus and priority issues

To set the core parameters of the study, national research institutions need to determine the focus of the integrated assessment at the outset. An integrated assessment can focus on a range of issues within a specific sector or at an economy-wide level. These issues can range from the impact of a comprehensive trade agreement, to the impact of specific measures contained within an agreement such as a change in subsidies or tariffs. An integrated assessment can also focus on trade-related measures. These might include economic and other

¹ Economics and Trade Branch would like to thank Sarah Richardson for reviewing the drafts.

² See p. 12. "Reference Manual for the Integrated Assessment of Trade-related Policies" UNEP, 2001.

policies that impact the openness and performance of a country and its relationship with other countries, including issues such as investment liberalisation.³ National research institutions are requested to specify the focus of the study at the beginning and to justify it.

Once the focus of an integrated assessment is identified, national research institutions are also requested to identify issues to be examined and to provide a clear justification for the examination. If a study examines trade-related policies within a specific country, the following criteria could be applied in selecting those priority issues for assessment:

- Is the policy likely to give rise to significant sustainability impacts (positive or negative)?
- Are the areas likely to be affected by a trade-related policy already under economic, social or environmental stress?
- Is the trade-related policy likely to make a significant contribution to the cumulative impacts of a new trade liberalization regime?
- What resources are available and can they be used to effectively conduct an integrated assessment?
- Is useful data available to undertake the analysis?

Lastly, in conducting an integrated assessment in a country, it is important to view the country position in light of its rights and obligations to the AoA. A checklist is provided in the Annex 2.

4. National policy variables.

The studies to be conducted in this project will identify national policies related to the implementation of the AoA provisions in domestic support, export competition, and market access. The national institutions could also repeat the same process as above to apply the criteria above to explain why the chosen national policies present important issues for the current assessment.

5. Stakeholders identification

Identify from the outset who are the beneficiaries of the policy change, or who has standing in the policy analysis. At national level, analyses are limited to benefits and costs to the constituents of the country, unless there are significant transboundary issues. For the purpose of holding consultation, it is usually the current generation who has standing in the analysis. Some studies may need to identify long-term benefits and costs, where analyses may need to consider the stake of future generations. The study should identify and delimit the scope with regards to the beneficiaries of the study from the beginning, so that a consultation process with all the relevant stakeholders is built into the integrated assessment process.

6. User identification

Identify who will use the results of the study. Which national government departments or agencies will be the “client” for this analysis? This will generally include, but is not necessarily limited to, officials from agriculture, trade and environmental ministries. The proposal could contain a provision for adequate consultation with those government departments expected to implement the ultimate policy proposals that emerge from this study. They are the clients of this study and the study should ensure their full participation in order to secure the implementation of the policy recommendations made under this project.

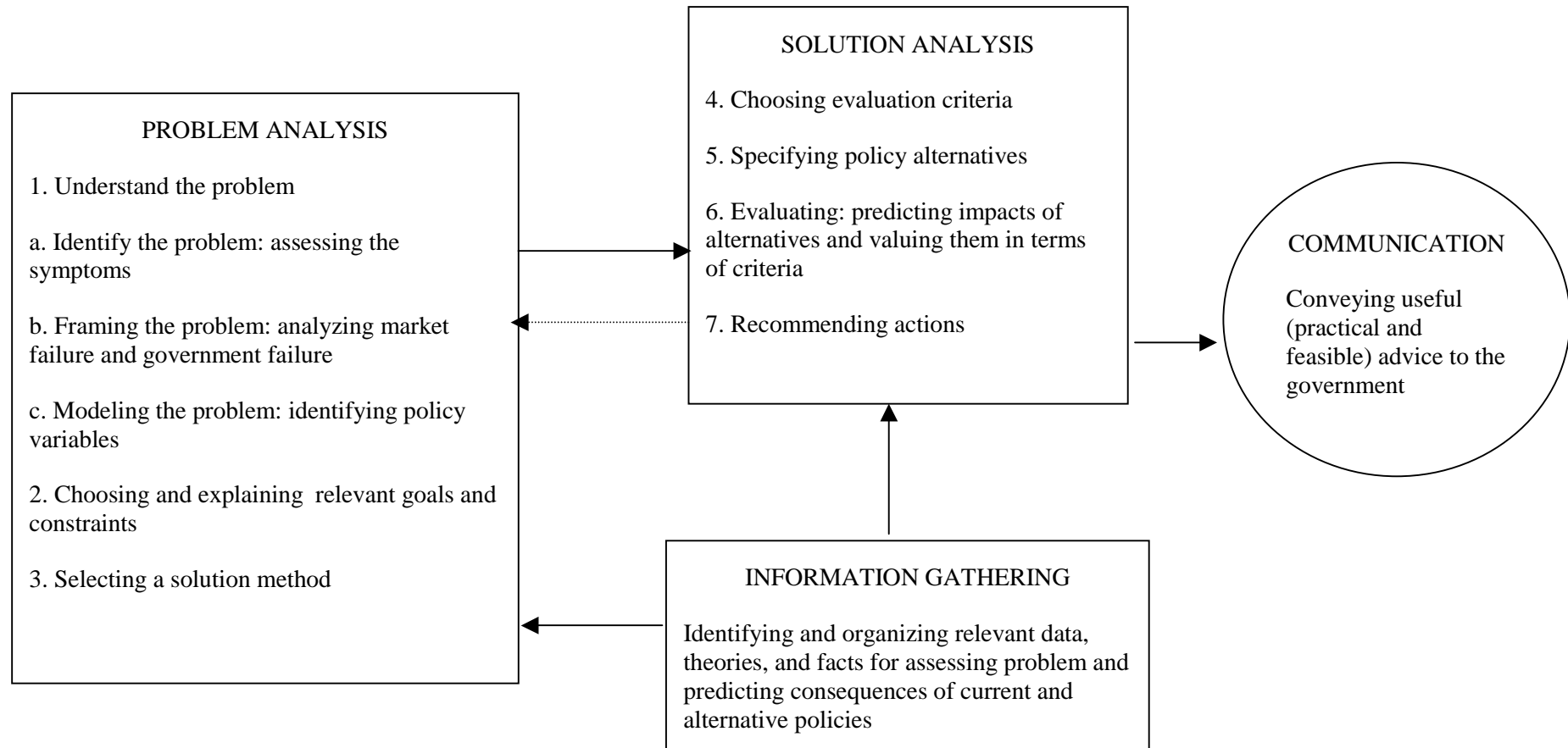
II. Analytical framework⁴

³ See p.9 “Reference Manual for the Integrated Assessment of Trade-related Policies” UNEP, 2001.

⁴ Adopted from *Policy Analysis: concepts and practice*. 3rd ed. D. L. Weimer and A. R. Vining. 1998. Prentice-Hall. P. 257.

After the preliminary decisions for project design are made, the proposal needs to consider the analytical framework in which the study will be conducted. UNEP proposes an approach consisting of two components: problem analysis and solution analysis.

Figure 1. Steps in problem analysis and solution analysis⁵



⁵ Adopted from Weimer and Vining “Policy analysis” p. 257.

A. PROBLEM ANALYSIS

1. The first step of problem analysis is to understand the problem. In this step, the researchers will identify and present the baseline conditions of the environment, economy and the society associated with the policy problem.

(a) Identifying the problem; assessing the symptoms

- Gather general information on rice production in the country
- Identify the major problem that warrants legitimate policy intervention
- Does the AoA have substantial impacts on the rice-producing sector?

Different countries with varied geographical characteristics and policy positions are primarily chosen to ensure an international dimension to this project. Although all countries are requested to analyze its rice sector in relation to the WTO AoA provisions, each country has to identify specific policy priorities and associated policy problems it wishes to address in the study. This sub-step explains the county specific policy problem and why it is timely and important to address it in the UNEP project.

In this section, national institutions are requested to present the current trend and historical path of economic, social and environmental conditions related to rice production. Data could be collected from a wide range of sources. They might include government and industry statistics, literature reviews, periodicals (local newspapers) and tailor-made interviews, if possible. A matrix presented in Annex 1 indicates the types of information that are useful to consider in putting forward a proposal.

The information collected will point to major economic, social and environmental problems to be addressed in the study.

After the baseline conditions are identified, national institutions could examine domestic problems in light of the possible adjustment required/imposed under the AoA. In other words, examine each relevant AoA provision to be implemented by the government under market access, export competition and domestic support, and determine if the implementation of any of these provisions could have significant impacts on the policy problems identified in the rice sector.

The AoA rules may not have much influence in a country where the sector has already been liberalized under other trade agreements (bilateral, regional or commodity agreements). On the other hand, for countries with unrealized exporting potentials, for countries that could offer huge market access opportunities, or for countries that have actual dominance over the world market with its exports or imports, the stakes surrounding the rights and obligations contained in the AoA will be very high. (See background paper section IV as well as Annex 2 for a

Box 1. Policy problem

In this paper we assume that there is a policy problem to be addressed in the integrated assessment. This does not, however, assume that current policies are fundamentally wrong or problematic. Rather, by definition, public policy or public intervention assumes a problem in the market. Since the market does not function or it is non-existent, the government has to intervene. In this sense, public policies presume the existence of the problem to be resolved. Therefore, in the first step of the policy analysis, such problem has to be identified and clearly addressed.

Box 2. The AoA, is it exogenous or endogenous variable?

UNEP propose that national institutions view the AoA as an exogenous policy parameter to the national government in designing the study. This is firstly because it is practically impossible for most governments to influence the agreed AoA provisions to change in the short term because of national policy problems. It is also because only after all the possible national policy measures are exhausted, a national government could meaningfully propose a change to the AoA rules at the WTO. In case, however, when the government has good reasons to believe that it could influence the AoA rules, they could be included under endogenous policy variables to be considered under section 1 (c) that follows.

checklist.)

(b) Framing the problem; analyzing market and government failures

- Establish and describe the causal relationships that link the symptoms identified above to factors that can be changed by public policy.
- Link market and government failure to policy interventions

The next step is to link the symptoms with the national policy arena. For each major problem identified under economic, environmental and social dimension, relevant national policies will be analyzed. What are the implications of current policies and practices of the economy, environment and social aspect? What was the hypothesis given by the legislature to implement that existing policy? Is it outdated, and does it need to be revisited?

Some criteria for assessing the policy effectiveness are the following:

Economic aspects;

- Is existing commodity market for rice functional and efficient?
- Is there a need to create a market for non-commodity goods and services?
- Is there government failure from existing policy?

Social aspects;

- Is the society rapidly changing to urge some revisions to the existing policies and legislation?

Environmental aspects;

- Does environmental problems pose social costs (negative externalities)?
- Was there an attempt to internalize such costs? Was it successful (i.e. if government failure exist)?
- How effective is the existing environmental regulation?

In this section, identified problems need to be analyzed vis a vis existing markets. First of all, to examine if the major problem identified could be effectively addressed by the existing markets? Next, when the market exists, is it efficient and functioning? Third if there is no market, can the government promote to make one? Fourth, if there is no market and government intervenes by non-market measures (tax, subsidies, or regulations), are they functioning? Or is there a government failure?

(c) Modeling the problem; identifying policy variables

- Assign policy variables in the identified causal relationship between policy problem and market or government failure.

In this step, the problems identified and relevant policy variables (elements that could be changed by public policy) are formulated in a model. For example, health problems found in rice producing regions could be partly attributed to the overdose and subsequent leaching to

Box 3. Market failure and government failure

In neoclassical economics' view, the market fails when goods are not allocated in a Pareto-efficient manner. In other words, there is an alternative way to allocate goods to augment the sum of social surplus. Four commonly recognized market failures include: public goods, externalities, natural monopolies, and information asymmetries. All of them warrant the government interventions to the market spheres.

Government intervention represents the collective choice made in the market sphere to complement the deficiency of the individual (consumer's) choice. Collective choice, however, could also fail as in the same manner as the private choice fails. Economic theories have not yet to provide the comprehensive picture of the government failure, but often analyses are made from political science point of view, such as rent seeking behavior or bureaucratic failure.

Source: Ch.5 rationales for public policies: market failures, ch. 8 limits to public intervention: government failures. In Weimer and Vining "Policy analysis".

waterways or mishandling of pesticides. Overdose of pesticides could result from the government failure in providing wrong economic incentives in the form of production subsidies. Mishandling may occur because of high illiteracy rate among farmers or lack of training and education. The government could intervene into such policy problems by reexamining the subsidies scheme in line with the domestic support reduction commitment under AoA to remove the market distortion, or in line with Green box to continue the support, or by proposing farm education programme. In this process, different hypotheses on the causal linkages between policies and the problems are required to provide a comprehensive picture of possible policy options available to the government.

2. Identify relevant goals and constraints

In the second step, important sustainable development goals should be identified in light of the policy problem presented.

- See background paper section II for some examples of policy goals.
- Need to consult with national stakeholders and policy makers.

It is clear that the government has limited resources. To allocate the resources effectively, different policy goals are to be compared for its priority. Goals embody the value the society chooses to pursue, or “goals must ultimately normative, a reflection of human values⁶”. For example, goals can be an increased living standard of farmers, the preservation of rural livelihood, or the benefit sharing from the use of on-farm biodiversity and its component.

Goals are important to be explicitly defined in the first stage of designing the assessment. It is because the goals ultimately guide policy makers through the decision-making process in choosing alternative policy options. Let us take again the case of pesticide pollution. The government faces a policy problem of increasing health costs because of the pesticide pollution. If government puts policy priority in a goal of adopting and applying new technology, it may well choose, for example, to promote a genetically modified crop that contains herbicidal properties in it, rather than a goal to empower farmers by providing farmers education to reduce pesticide overdose and mishandling. Such national policy priority or goal is a given condition to the researchers that need to be reflected in the analysis, possibly as a status quo policy option under the solution analysis.

3. Selecting a solution method

The third step is to select a solution method in accordance with the goals identified in the last step. In most cases, researchers choose to use the method they are familiar with. Even when the resource constraints prevent them to try new method that is more relevant to the problem and goals they need to address, limitations posed by choosing the method need to be noted.

If the policy analysis mainly concerns market efficiency within the existing, functional market framework, cost benefit analysis could be used effectively. Cost benefit analysis could be extended to include qualitative elements in a number of ways. On the other hand, if the policy analysis also need to consider goals that go beyond the market efficiency and that could not be reduced to a single numéraire of monetary value, such as value to realize environmental sustainability or to preserve cultural heritage, cost benefit analysis may significantly limit the credibility of the results. In such case, ideally, policy analysis needs to choose a solution method that could consider a multigoal analysis where different types of goals (values) could be simultaneously presented.

6 Ibid. p. 269.

B. SOLUTION ANALYSIS

Project proposals need to contain steps 1 to 3 of the problem analysis as reviewed so far. Although following steps are to be conducted in the project itself, this paper will review them for the future reference. In the following section, multigoal analysis is discussed because cost benefit analysis is a single goal case of multigoal analysis.

4. Choosing evaluation criteria

- Operationalize the goals by interpreting them into concrete criteria.

Multigoal analysis systematically compares alternative policies in terms of goals. Constructing a simple matrix as shown in the annex 3 could facilitate this process. The goals have been identified under the problem analysis. Other elements of the table are to be filled in with the solution analysis.

First step in solution analysis is to interpret general goals identified in the problem analysis into criteria that will help assessing the desirability of alternative policies. Most common set of goals and criteria is without doubt “increased standard of living” and “per capita GNP,” with all the merits and demerits attached to it. In annex 3, general goals to consider multifunctionality of agriculture is interpreted in one criteria, for example, to sustain productions in paddy field area that provides habitat for endangered species. Good criteria could allow the measurement of the progress towards the goal by different policy alternative. In order to cover multiple dimension of a goal, more than one criterion may be needed. Some goals may be difficult to be restated into criteria. This could be the case when there is no quantitative data associated with it. In such case, goals could be used directly as criteria and policies could be rated in ordinal value (i.e. 1, 2, 3 in the order of desirability).

5. Specifying policy alternatives

In light of the goals and criteria, three to seven policy alternatives are to be compared. One policy alternative has to be the current policy or a policy proposed. Researchers develop policy alternatives utilizing various sources of inspiration, such as existing policy proposals, policies implemented in other jurisdictions, generic policy solutions (supply-side tax, demand-side tax, supply-side subsidies, demand-side subsidies, etc), and custom-designed alternatives. Followings are heuristics suggested by Weimer and Vining in crafting policy alternatives⁷:

- Do not expect to find a dominant or perfect policy alternative;
- Do not construct a preferred policy with a set of “dummy” or “strawman” alternative;
- Do not have a “favorite” alternative until you have evaluated all the alternatives in terms of all the goods;
- Ensure that alternatives are mutually exclusive;
- Avoid “kitchen sink” alternatives—or “do-everything” alternatives;
- Alternatives should be consistent with available resources, including jurisdictional authority and controllable variables;
- Policy alternatives are concrete sets of actions, but not abstract values.

6. Evaluating: predicting impacts of alternatives and valuing them in terms of criteria

Three tasks under this steps are (a) predicting, or forecasting, the impacts of the alternatives; (b) valuing the impacts in terms of criteria; and (c) comparing alternatives across disparate criteria.

⁷ Ibid. pp. 280.

(a) Predicting the impacts of alternatives

In this step, researchers reexamine if the criteria chosen are realistic enough to reflect the underlying goals by starting to fill in the goals-criteria/policy alternatives matrix. The process of predicting impacts and comparing them against each policy alternative may point to the need to fine-tune the criteria. Researchers should aim to fill in each and every cell so that the analysis is exhaustive to their knowledge. Cells do not need to be filled in, though, with a single number (point estimate). It could have ranges (confidence intervals) reflecting the uncertainty surrounding the prediction. Sometimes, uncertainty could be so large not to allow researchers to find a quantitative entry. In that case, qualitative entry may well serve the purpose.

(b) Valuing impacts

Impact valuation allows a comparison of different criteria by introducing a common metric or numéraire in certain cases. If two criteria can be cardinally measured by the common numéraire, the valuation could be summed up. In the extreme case of cost benefit analysis where all impacts are valued in dollars, the policy makers will be presented with a list of single monetary values to compare impacts of different policy alternatives. Environmental and social impacts are, however, rarely reduced to a single monetary value without losing the meaningfulness of information contained therein. Thus it seems unavoidable to have more than one numéraire in the goals/policy alternatives matrix.

Weimer and Vining suggest that researchers “should try to make the impact criteria as comparable as possible without distorting their relationships to the underlying goals⁸”. In other words, if a common numéraire could be found to compare most of the impacts, it will help the final results to be more comprehensible.

(c) Comparing alternatives across incommensurable criteria

Having multiple criteria and possibly more than one numéraire that are incommensurable, it is rare that one policy alternative scores best across all criteria, or the comparison of alternatives are straightforward. Therefore, the choice has to be made on which goals are weighted more than others, or which values are taken to be more important than others in achieving the overall goal of the policy implementation. The value upon which the choice is made must be explicit in the analysis so that the resulting recommendation is worth the credibility. Elements of uncertainty need to be spelled out, too.

7. Recommending actions (Policy response)

- Propose the alternative policy with recommended set of actions to the government

Using the results of the assessment as the supporting argument, this last step provides the government with the recommended set of actions to implement the policy that proved to be the best alternative. The policy needs to come together with a clear set of instructions for action.

⁸ Ibid. p. 286.

Annex 1

A matrix for identification of current trends in rice production

Dimensions	Issues/Indicators	
Economic trends	Volume of rice production	
	World commodity price	
	Local commodity price	
	Tariffs	
	Protection coefficient	
	Farm income	
	Farming sector's contribution to the GDP	
	Relative prices for trade	
	Technological progress	
Social trends	Land tenure	
	Demographic movement	Urban or cross border migrations
	Equity	Lorenz curve and Gini coefficient
	Informal sector	
	Cultural values	
	Health and sanitary concerns	
	Rural viability	
Environmental trends ⁹	Land and water degradation	
	Soil erosion	Soil type
		Rainfall density
		Ground cover
		Gradient of cultivation area
	Nutrient leaching	Nitrogen leaching

⁹ J. Winpenny and R. Willis. *The Economic Assessment of Production-related Environmental Impacts—An FAO manual*. ESC/M/94/7. Food and Agriculture Organization of the United Nations. Rome. 1994.

		Phosphorous leaching
Pesticide leaching and contamination		Overdose (state indicator)
		Health impacts on animals and humans (response indicator)
Residue pollution		Non-toxic organic material as the by-products
Water logging and salinization		Land abandonment
Greenhouse gas (methane) emission from paddy fields		
Groundwater depletion due to heavy water use for irrigated rice paddy field		
Artificial nitrogen inputs and introduction of high yield variety		
Land use change		
Reclamation of natural ecosystem		Clearance of natural forests
Land use change		Irrigation, terraced paddy
Provision of environmental goods and services		
Habitat values		
Rural landscape		
In situ conservation of genetic resources		
Genetic erosions		high yield variety
Environmentally sound technology		
Alien invasive species		
Water transmitted disease to farmers		

Annex 2 : Problem analysis: How to assess the impacts of the AoA and to examine the relevant AoA provisions?

Here are some ideas to conduct an assessment of the AoA in the sector or rice.

- Data analysis: comparison of the import and export before and after the implementation of the AoA.
 - If a significant difference is found in export and/or import value or quantities, then an identification of the factors explaining this difference has to be conducted. Possible factors: diminution of tariffs, reduction of foreign domestic support or of export subsidies, others.
 - If no significant difference appears, an investigation should be undertaken to try to determine the reasons of the status quo: Possible explanations: the domestic market was already widely open; the country has bilateral agreement(s) with trading partner(s); lack of significant changes in tariffs' rate, or in foreign domestic support; new trade barriers, etc.
- Consider for each main provision of AoA the possible impacts on the environment, development and economy. Some ideas:
 - Consider whether the diminution/removal of domestic supports or export subsidies could lead to effects on land conversion, use of factor inputs, or adoption of new technologies.
 - In contrary, some developing countries might have introduced new domestic support or export subsidies: how do these supports impact the environment, the society and the economy?
 - Consider scale impacts, i.e. the change in production volume, associated with tariff liberalization.
 - Consider whether the AoA is likely to result in changing production mix, product shifts or output substitution and move towards crops that are more or less pollution intensive.
 - Consider whether increased liberalization be expected to encourage intensive production techniques, an increased reliance on inputs and increases in land under cultivation.
 - Assess the impacts of prices and the extent to which incomes of producers, exporters and importers could rise or decline.
- Study the application laws established at national level to implement the AoA. How do these laws impact on the environment, on the economy and on the society?
- Good knowledge of the trading partners and short analysis of their agriculture policies will also give some indications concerning the origins of some problems.

Annex 3

An example of multigoal analysis based on the proposal of the friends of development box (G/AG/NG/W/13)

Goals	Criteria	Alternatives		
		Current policy	Creating development box	Implementing the AoA reduction commitment
Protect and enhance developing countries' domestic food production capacity in key staples	Self sufficiency rate in rice (or key staple crop)	Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
	Increase in domestic production of rice	Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
Increase food security and food accessibility for especially the poorest	Increase of daily nutrition intake in rural area	Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
	Stable food price in local market in the rural area	Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
Provide or at least sustain existing employment for the rural poor	Employment rate (including informal sector) in the rural area	Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
Protect farmers which are already producing an adequate supply of key agricultural products from the onslaught of cheap imports		Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
		Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
Flexibility to provide the necessary supports to small farmers especially in terms of increasing their production capacity and competitiveness		Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
		Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
Stop the dumping of cheap, subsidized imports on developing countries		Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation
		Predicted impact and its evaluation	Predicted impact and its evaluation	Predicted impact and its evaluation