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Development and promotion of regional strategic food and agricultural commodity value chains in Africa

I. Results of country case studies

A. Selection of countries and commodities

1. The selection of pilot countries and commodities was done during the consultative meetings with the African Union, COMESA, SADC, ECOWAS and FAO in May 2011 and June 2013. The commodities chosen were rice, maize and livestock; the pilot countries selected were, for COMESA, Botswana, Ethiopia, Malawi, Uganda, the United Republic of Tanzania and Zimbabwe, and for ECOWAS, Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and the Niger. The countries were selected based on their readiness (that is, willingness and preparedness) to take part in the study, their potential in terms of the selected commodities, and their readiness for an integrated regionally coordinated value chain for certain commodities.

B. COMESA-SADC commodity country case studies

1. Study on livestock value chains (Botswana and Ethiopia)

(a) Livestock production, characteristics, sanitary and phytosanitary compliance, challenges and opportunities

2. COMESA shares account for 65 per cent of Africa's total livestock units, which themselves are made up of 39 per cent cattle, 59 per cent sheep and goats, and 2 per cent camels. Livestock alone accounts for between 37 and 87 per cent of total cash income of agro-pastoralists and pastoralists in Ethiopia, while in Botswana cattle accounts for 62 per cent. The economic contribution of the livestock value chain in Botswana is about 80 per cent of total agricultural gross domestic product (GDP), the second foreign exchange earner after diamonds and a source of livelihood for more than 80 per cent of smallholder farmers. In Ethiopia, livestock accounts for 12 to 18 per cent of total GDP, 33 per cent of agricultural GDP, 12 to 15 per cent of total export earning, is the second foreign exchange earner after coffee, and provides livelihood for more than 65 per cent of the population (ECA/ACETSA, 2012).

(b) Policy recommendations for the livestock value chains of Botswana and Ethiopia

3. Policy recommendations include: (i) Enhancing livestock production and productivity through the rehabilitation of community-based rangeland and the reduction of incidences and impact of foot-and-mouth disease. (ii) Sustaining market access to the European Union, COMESA, SADC and elsewhere; (iii) Enhancing institutional capacities in pastoral development, research and extension, marketing systems, information flows and value addition, (iv) Strengthening intra- and cross-border trade in livestock and livestock products under the tripartite trade agreement of EAC, COMESA and SADC; (v) Building regionally integrated livestock value chains through regional initiatives, as well as intra-regional trade with the Middle East, in terms of meeting special specifications and quality. The two countries stand out as having comparative and competitive advantages for both supply and value addition for livestock and livestock products.

2. Maize baseline studies

4. Baseline studies on maize value chains were carried out by ECA, in collaboration with COMESA, the Alliance for Commodity Trade in Eastern and Southern Africa and the African Union Commission, within a regional perspective. The baseline studies were undertaken in Malawi, Uganda, the United Republic of Tanzania and Zambia. This section provides a summary of these studies with a view to developing evidence-based recommendations towards the development and promotion of regional maize value chains in the COMESA subregion.

(a) Maize production

5. In the past decade maize production in the Eastern and Southern Africa subregions has increased by 44 per cent to reach 31 million tonnes in 2010. Egypt on average contributed about 27.3 per cent of all maize in the subregion while in Malawi, because of the introduction of farm subsidies in 2005, there has been a major increase in annual production, from 1.22 million tonnes in 2005 to 3.7 million tonnes in 2009, or an increase of over 80 per cent increase in the past decade. The same trend is valid for Tanzania and Zambia.

(b) Intra-trade in maize: Status, potential and challenges

6. Agricultural trade accounts for 39 per cent of that trade. It also accounts for more than 20 per cent of COMESA global trade. Maize exports accounted for 76.67 and 82.68 per cent of total COMESA cereal exports (\$415.19 million) and intra-COMESA cereal exports (\$276.35) in 2011 respectively. Maize imports accounted for 27.73 per cent and 78.47 per cent of total COMESA cereal imports (\$9,027.78 million) and total intra-COMESA cereal imports (\$291.99 million) in 2011, respectively. Egypt is the biggest importer of maize in the subregion, importing 75 per cent of all maize imports in 2010. The subregion is mostly a net importer of maize. Since 2001, COMESA has had a negative balance of trade in maize, which reached \$2,184.9 million in 2011.

(c) Constraints to regional maize value chains

7. The challenges for intra-trade in maize are: absence of regional value chains and linkages; unpredictable trade environment; inadequate facilitating of cross-border trade in agricultural commodities; unharmonized food safety standards across the subregion; absence of regionally harmonized quality and product standards; lack of adequate storage facilities; lack of finance and adequate financial systems like warehouse receipts; and lack of adequate processing (processing is central to value addition, but currently the subregion only processes maize to make maize flour and to some extent animal feeds).

(d) Policy recommendations for maize value chains in the COMESA subregion

8. (i) Increase and diversify maize processing in the subregion; (ii) Call for joint ventures between national and regional maize producers, companies and foreign investors so that value is added to maize in many ways for the local, regional and international markets, for wealth creation and retention; (iii) Create contract markets and marketing in the subregion and develop their support systems; (iv) Small-scale farmers need to be integrated into the value chain system; (v) Maize value chains need to be reorganized along the input supply value chain where forward contracts are prevalent, (vi) There is a need for a clear legal framework for government involvement in the sub-sectors. Such a framework is urgently needed to upgrade the value chains, enhancing collective performance. It is also crucial to have clear knowledge of the current capacity of private traders in ensuring that price are transmitted correctly; (vii) Promotion of trade in the subregion through elimination of tariff and non-tariff barriers; (viii) Development of a sustainable market information system; (ix) Support for small-scale farmers by granting access to inputs, including improved seeds, credit and markets and promoting their upgrading; (x) Creating a conducive business environment to include institutional, policy and regulatory framework.

C. ECOWAS commodity country case studies

1. Maize study carried out by the International Institute of Tropical Agriculture in Benin, Côte d'Ivoire, Ghana and Mali

(a) Production data

9. The production of maize in 2013 in the selected countries is as follows: 661,000 tons in Côte d'Ivoire, 1,346,000 tons in Benin, 1,503,000 tons in Mali and 1,800,000 tons in Ghana (FAOSTAT, 2014). In Côte d'Ivoire the vast majority of maize is grown without fertilizers. It has been reported that only 30 per cent of the cultivated area is under improved seed. Concerning the cropping system, pure maize is seldom practised. The majority of farmers intercropped maize with other staple crops. In 2013, Benin's production experienced an increase of 180 per cent compared to its production of 750,442 tons of 2000 (FAOSTAT) 2014). Ghana and Benin are nurturing maize farming and putting in place incentives and support for maize.

(b) Potentialities, opportunities and challenges for maize value chains in the selected countries

10. There are substantial opportunities for expanding intra-regional maize trade and regional value chains in the region. However, intra-regional trade and value chains face several impediments in West Africa. The processing sector in the region is constrained by issues related to technology and equipment (unavailability of modern machines, lack of research to improve traditional systems), training, quality, promotion of the derived products, high energy costs and storage and transport costs, credit and financing, and marketing. The major constraints for marketers include transport (which can account for up to 40 per cent of the cost of the final product owing to poor road systems and high fuel costs), storage (due to costs and poor infrastructure), lack of information sharing, and insufficient organization (despite the existence of associations and cooperatives in some countries).

(c) Policy recommendations

11. As discussed above, maize production and value chains face various constraints in the four countries studied. In order to overcome them, there is a need to harmonize policies and regulatory frameworks, standards and other measures to eliminate all impediments to the development of value chains. In particular, it is necessary to: (i) Improve access to inputs in general, especially improved seeds and fertilizers, for farmers with low yields by facilitating access to credit for farmer organizations; (ii) Train farmers in post-harvest storage techniques to reduce post-harvest losses due to poor grain storage, insect infestation or poor packaging; (iii) Enhance coordination in product standards involving farmers because buyers face uncertainties in terms of quality and standards; (iv) Coordinate value chains across borders to bring about economies of complementarity, economies of scale and economies of vertical integration, which affect risks and returns for both buyers and sellers.

2. Livestock study carried out by the International Livestock Research Institute in Burkina Faso, Côte d'Ivoire, Mali, the Niger and Senegal

(a) Small ruminants production and value chains in ECOWAS

12. This livestock study was limited to a scoping study of small ruminant's value chains in West Africa (Burkina Faso, Côte d'Ivoire, Mali, the Niger and Senegal).

13. According to the baseline study, meat production in the region amounted to 900,719 tons in 2010, representing 32 per cent of the continent's production. The main producers are Nigeria (458,155 tons), Mali (115,505 tons), the Niger (109,200 tons) and Burkina Faso (51,626 tons). The Niger production level includes animals imported live into the country for slaughter. Goat milk plays a key role in the supply of animal source food in pastoral areas, in particular among the most vulnerable rural households. For instance, in the pastoral areas of Burkina Faso, goat milk contributes to about 30 per cent of milk supply. Milk production for West Africa has increased by 268 per cent during the period 1985-2010, with the average growth rate for the whole continent estimated at 101 per cent or 4.04 per cent per year.

(b) Opportunities and prospects for the regional market for small ruminants

14. Livestock trade is facilitated by the complementarities and the relative natural specialization of the two major agro-ecological zones, the Sahel countries being the main producers of livestock (Mali, the Niger and Nigeria) and the coastal countries being more consumers than producers (Côte d'Ivoire, Senegal). Other coastal countries also receive supplies, such as Guinea, Liberia and Sierra Leone. West Africa is a producer of small ruminants by excellence. Production amounted to 218 million heads in 2010, with 123 million goats and 94 million sheep. This production is 33 per cent of the total of the continent. Mali and the Niger are well positioned to be the zones of production and transformation, which can be done anywhere in the region.

(c) Policy recommendations and way forward

15. The study recommends the following: (i) Improved processing and sanitary quality of small ruminant products; (ii) Removing barriers to trade at the national, regional and continental levels; (iii) Improving transport conditions; (iv) Strengthening the capacity of stakeholders; (v) Relaxing taxation and red tape; (vi) Easing access to credit for value chain actors.

II. Results of country case studies on greenhouse gas emissions: analysis along the maize and rice value chains in selected countries in West Africa

A. Maize study

1. Case of Côte d'Ivoire

16. The value chain analysis revealed that the leading cost contributors to maize farming in Côte d'Ivoire are cultivation (43 per cent of cost), land preparation (18 per cent) and planting (15 per cent). Fertilizing contributes 56 per cent towards the cost of cultivation. Urea, nitrogen, phosphorus and potassium account for 67 per cent and 28 per cent of the cost of fertilizing, respectively, with the 5 per cent balance being attributed to labour costs. Spraying accounts for 38 per cent of the cost of cultivation of which 89 per cent is spent on chemicals (see annex, fig. 15).

(a) Value chain of maize farming in Côte d'Ivoire

17. Based on the analysis, the total cost of production per hectare of maize is \$305/ton. Out of this cost, fertilizer accounts for 40 per cent, followed by human labour costs (22.5 per cent) and agricultural chemicals (15.8 per cent). The average yield of maize for smallholder and cooperative farms is about 2.74 t/ha. The cost per unit of product is \$123.7/ton. The cost of production in Côte d'Ivoire is the lowest of the three countries studied.

(b) Greenhouse gas emission analysis and discussion

18. The main source of emissions is fertilizer application, which accounts for 87.5 per cent of total emissions in maize farming (0.64 t CO₂e/ha/season). Nitrogen fertilizers contribute 89.3 per cent due to the release of nitrogen. The study shows that the largest emission from maize farming is nitrogen from the application of nitrogen fertilizers. The rest is minimal (farm machinery 8.8 per cent and burning residue 4.7 per cent). The value chain analysis emissions study on maize farming conducted for Côte d'Ivoire indicates that the average yield is 2.74 t /ha/season. The average cost of production is \$305/ha and the average unit cost of production is \$124/t. Greenhouse gas emissions are 0.64 t CO₂e/ha (or 0.29 t CO₂e/ton) for maize farms.

2. Case of Ghana

19. Maize accounts for 55 per cent of grain output followed by paddy rice (23 per cent), sorghum (13 per cent) and millet (9 per cent). Ghana is one of the largest maize producing countries in sub-Saharan Africa. Maize occupies between 50 to 60 per cent of the total cultivated cereal areas and its harvested areas represent around 9 per cent of the total harvested areas in the region (Ragasa and others, 2013). Despite this important role in Ghana's economy, the country still has difficulties meeting its domestic demands due to a number of constraints.

(a) Value chain analysis for maize production in Ghana

20. The study revealed that the leading cost contributors to maize farming in Ghana are cultivation (68.3 per cent of overall production cost), land preparation (12.6 per cent) and harvesting (7 per cent). The cost components of these three principle processes are further broken down to understand the cost drivers behind each. Seventy-eight per cent of cultivation cost is attributed to fertilizing. The cost of the actual fertilizers – nitrogen, phosphorus and potassium (95.5 per cent) and urea (1.5 per cent) – combine for 97 per cent of fertilizing cost and the additional 3 per cent is contributed by the labour used in applying the fertilizers. According to the analysis (see

annex, table 8) the cost of maize production is \$180.5/ton which translates to \$301.5/ha.

(b) Discussion on greenhouse gas emissions from maize farming in Ghana

21. Although emissions from maize farming are attributable to nitrogen application, the rate in Ghana is below the recommended level and emissions are actually low. Data indicate that 66 per cent of farmers can increase yields by a factor of two by using improved seed and applying the recommended quantity of fertilizers (which would of course result in an increase in emissions from the current 0.22 t CO₂e/t to 0.46 t CO₂e/ton of maize), if farmers could utilize improved seeds and recommended fertilizers in conjunction with the essential agricultural practices.

3. Case of Benin

22. The study revealed that average farm size is 3.53 ha (ranging from 0.5 ha – 28 ha/farm). Ninety per cent of the farms sampled, however, range from 0.5 – 5 hectares (averaging 1.88 ha), while only 10 per cent of farms range from 10 ha – 28 ha. Among the farms studied, 42.5 per cent harvest once per year while 57.5 per cent harvest twice per year. Harvest data indicate uni-modal rainfall regions harvesting in November/December timeframe whereas bi-modal regions harvest as early as May and continue through August with the second (minor) harvest ending in December/January.

(a) Value chain analysis and discussion

23. The value chain analysis study revealed that the leading cost contributors to maize farming in Benin are cultivation (41 per cent of overall production cost), land preparation (26 per cent), and planting (12 per cent). The summary of costs shows that the total cost of production per hectare of maize is \$264. This cost is dominated by two inputs: hired human labour (52.5 per cent) and fertilizer (25.5 per cent). All other costs combined total only 22 per cent of the overall cost.

(b) Greenhouse gas emissions from maize farming in Benin

24. The value chain analysis emissions study on maize farming conducted for Benin indicates that the average yield is 1.36 tons/ha/season. Emissions are 0.46 t CO₂e/ha (or 0.38 t CO₂e/ton) for maize farms. The major contributor to emissions in maize farming is the application of fertilizers in general, and the application of nitrogen fertilizers in particular, due to their high amount of nitrogen emissions. Emissions due to fertilizer application are low in maize farming in Benin compared to the potential emissions from the application at the regionally recommended rate.

4. Summary of the three country case studies

25. The study confirmed that Côte d'Ivoire displays the most cost-effective scenarios for maize production, followed by Benin. If ECOWAS is thinking of preferential zones for maize production in West Africa, it should be these two countries (see annex, tables 8 and 9).

(a) Greenhouse gas emissions along maize production value chains

26. The study found that the emission rate in Ghana is at 0.38 t CO₂e/ha/season and could go up to 1.75 t CO₂e/ha/season when farmers have means to apply recommended rate of nitrogen. The largest emission from maize farming is nitrogen from the application of nitrogen fertilizers. Although insignificant, emissions from burning fuel to operate farm machinery and equipment, as well as residue burning, contributed 14.7 and 12.3 per cent respectively. These relatively high levels of emissions from fuel burning reflects the moderate use of mechanization in Ghana. To compare with the

United States where maize farms are highly mechanized, emissions from fuel combustion represent 15.4 per cent of total maize farming emissions. In comparing with Côte d'Ivoire, Benin's emissions are 28.1 per cent lower on a per hectare basis. However, due to the higher yields enjoyed in Côte d'Ivoire, the per-ton emissions in Benin are 31 per cent higher than in Côte d'Ivoire. With regard to Ghana, the emission rates are lower in terms of per unit area and product due to lower application rate of fertilizers. Emissions are 0.38 t CO₂e/ha (or 0.22 t CO₂e/t) for maize farms.).

(b) Rice value chain study in Côte d'Ivoire, Senegal and Ghana: greenhouse gas emission factor

(i) Côte d'Ivoire

27. Rice is one of the major staple crops in Côte d'Ivoire. Rice production can be categorized into three major systems based on water management as defined by local rice authorities: irrigated farming; rain-fed but with continuous flooding by holding or controlling the water in the rice field until harvest; and rain-fed without holding or controlling the water in the field. Côte d'Ivoire's national rice production covers less than 40 per cent of the nation's consumption (more than 1.8 million tons of milled rice) and the country imports the balance to meet the total national demand. With a per capita consumption rate of 67.3 kg per annum for its 21.9 million population, Côte d'Ivoire is almost on par with high rice-consuming countries such as India (68.2kg/year) and China (76.3kg/year).

Cost of rice production in the value chains in rain-fed farming

28. The study revealed that the leading cost contributors to rain-fed rice farming in Côte d'Ivoire are cultivation (43 per cent of the cost), harvesting (25 per cent) and planting (17 per cent). Cultivation involves fertilizing, spraying, and weeding. Harvesting breaks down into two secondary processes: harvesting in the field (57 per cent of the overall harvesting cost) and threshing (43 per cent of the overall harvesting cost). Both of these two secondary processes are driven 100 per cent by the cost of labour, i.e. no machinery is used. Planting, the third highest cost component along the primary value chain, is also dominated by labour costs (51 per cent). Fertilizing costs (25 per cent) and seed cost (24 per cent) complete the category. Table 10 (see annex) gives the detailed cost of production for different types of farming: rain-fed (\$284.49/ha) and continuous flooding (\$256.49/ha).

Greenhouse gas emissions

29. The major emission in rice farming is methane gas which arises from the anaerobic decomposition of biomass in soil under cover of water. As is evident from the name of the water management system, rice fields with continuous flooding stay under water during the cultivation period and thus emit more methane in comparison with rain-fed fields that are covered by water for shorter periods. According to the study, methane emissions from continuously flooded fields are about 3.25 t CO₂e/ha/season, while it is 0.98 tCO₂e/ha/season for rain-fed rice fields in Côte d'Ivoire. The emission results for continuously flooded fields are comparable to rice fields under similar conditions in other rice producing countries such as Vietnam, specifically with rice fields that do not apply manure during land preparation (3.26 tCO₂e/ha/season). The next major contributor to emissions is the application of fertilizer (0.89 tCO₂e/ha/season) for continuously flooded and 0.34 tCO₂e/ha/season for rain-fed rice fields in Côte d'Ivoire. Though not very significant, emissions that arise from residue burning and fuel combustion contribute by 0.07 tCO₂e/ha/season and 0.43 tCO₂e/ha/season for rain-fed and continuous flooded fields, respectively. The overall emissions from rice

farms in Côte d'Ivoire are about 1.4 tCO₂e/ha/season for rain-fed farms and 4.55 tCO₂e/ha/season for continuously flooded farms.

(ii) Senegal case study

30. Rice is the major staple crop in Senegal. Rice production in Senegal can be categorized into two major systems based on water management as defined by the Government: irrigated with total or partial submersion, and rain-fed in the lowlands or uplands. The yields in the two categories vary significantly based on the relative water constraints and agricultural practices in each system of production. Senegal's national rice production covers less than 30 per cent of the nation's consumption (more than 1.25 million tons of milled rice) and the country imports the balance to meet the total national demand. With a per capita consumption rate of 84.7 kg per annum for its 13.3 million population, Senegal is one of the highest rice consuming countries worldwide, surpassing India and China.

Value chain of Rain-fed, irrigated rice farming in Senegal

31. The study revealed that the leading cost contributors to rain-fed rice farming in Senegal are harvesting and land preparation, each contributing 27 per cent to the total cost of production. Cultivation is the third major cost contributor with 22 per cent but with planting contributing nearly the same to overall costs (21 per cent). Paddy production cost per ton for irrigated rice is 59 per cent higher than for rain-fed rice. This arises from the higher expenditures incurred by irrigated farms for fertilizer (four-fold), harvesting (three-fold), chemicals (double) and labour (seven-fold). Irrigated farms spend 43 per cent more for selected variety seeds compared to rain-fed farms. The analysis of rice farming conducted for Senegal indicates that the average yield is 3.14 tons paddy/ha/season for rain-fed and 4.8 tons paddy/ha/season for irrigated rice farms. The cost of production is \$336/ha for rain-fed and \$82/ha for irrigated farms whereas it is \$127/ton of paddy for rain-fed and \$203/t of paddy for irrigated farms.

Greenhouse gas emission analysis and discussion

32. According to the study, emissions are 1.85 t CO₂e/ha/season, and approximately 1.03tCO₂e/ha/season for rain-fed rice fields in Senegal. This corresponds to 0.6 t CO₂e/ton paddy for rain-fed rice farms. Emissions from irrigated (multiple aerated) farms are 4.02 t CO₂e/ha or 0.84 t CO₂e/ton paddy. There are other element participating in emission such as fuel burning, application of fertilizers. The overall emissions from rice farms in Senegal are about 1.94tCO₂e/ha/season for rain-fed farms and 4.02tCO₂e/ha/season for multiple aerated farms. Irrigated farms have higher emissions due to methane generation arising from anaerobic decomposition and the higher rate of fertilizer application compared to the rain-fed rice farms (see annex, table 11).

(iii) Ghana case study

33. Rice is the second most important cereal crop in Ghana in terms of consumption. Its production can be categorized into three major systems based on the agro-ecological zones of the country. The contributions of production in the agro-ecological zones are irrigated (8 per cent), lowland/inland valleys (77 per cent) and upland (15 per cent). Ghana's per capita rice consumption rate is 38 kg per annum for its 22 million population. The national rice production covers about 36 per cent of the nation's consumption (more than 975,000 tons of milled rice) and the country imports the balance to meet the total national demand.

Value chain of rice farming in Ghana

34. The study concludes that the most expensive cost always are in cultivation, fertilizing, chemicals, seeds, harvesting and labour. But the level of those cost are different from one farming method to another. In Ghana, the National Rice Development Strategy is in place with aim to double the current production of 676,000t to 1,500,000 by 2018. In the process the Government is supporting the development of the value chain of rice nationally. The study confirmed 4 areas where actions are necessary to unlock the potential of rice the value chain: market and marketing, governance, institutional and human resource. The cost of production is \$180.5/ha.

Greenhouse gas emissions

35. Emissions are 1.7 t CO₂e/ha or 1.11 t CO₂e/ton paddy for rain-fed rice farms, whereas they are 4.79 t CO₂e/ha or 2.84 t CO₂e/ton paddy for continuously flooded farms, 4.04 t CO₂e/ha or 1.25 t CO₂e/ton paddy for single aerated and 3.89 t CO₂e/ha or 1.15 t CO₂e/ton paddy for multiple aerated rice farms. Continuously flooded farms have higher emissions due to methane generation arising from anaerobic decomposition and higher rates of fertilizer application compared to rain-fed rice farms. Yet, continuously flooded farms post lower paddy yields than rain-fed farms, thus creating the bad combination of higher emissions and lower yields. Both single and multiple aerated farms have lower methane emissions due to aeration even though they apply higher rates of fertilizer compared to the continuously flooded rice farms. They also both yield more abundantly than continuously flooded and rain-fed systems and thus exhibit the preferred combination of lower emissions and higher yields.

(c) Findings and conclusion of the study on rice for the three countries

36. The major greenhouse gas emission in rice farming in the three countries is methane gas, which arises from the anaerobic decomposition of biomass in soil under cover of water.. According to the study, the methane emissions from continuously flooded fields are about 3.25 t CO₂e/ha/season; while it is 0.98 tCO₂e/ha/season for rain-fed rice fields in Côte d'Ivoire. The emission results for continuously flooded fields are comparable to rice fields under similar conditions in other rice producing countries such as Vietnam, specifically with rice fields that do not apply manure during land preparation (3.26 tCO₂e/ha/season). The next major contributor to emissions is the application of fertilizer (0.89 tCO₂e/ha/season) for continuously flooded and 0.34 tCO₂e/ha/season for rain-fed rice fields in Côte d'Ivoire. Though not very significant, emissions that arise from residue burning and fuel combustion contribute by 0.07 tCO₂e/ha/season and 0.43 tCO₂e/ha/season for rain-fed and continuous flooded fields, respectively. The overall emissions from rice farms in Côte d'Ivoire are about 1.4 tCO₂e/ha/season for rain-fed farms and 4.55 tCO₂e/ha/season for continuously flooded farms (GDS study, 2013).

III. Malabo declaration in relation to agricultural commodity value chain development in Africa

37. Following in the steps of the 3ADI, which is the Comprehensive Africa Agriculture Development Programme framework for the development of agribusiness and agro Industries, and the 1975 and 2013 declarations of Lima, the Malabo declaration of June 2014 was clear on how agri-led transformation will be the way for Africa to beat poverty. and generate increased and high quality employment. 3ADI embraces the principles of investing in agriculture for economic growth and food security of 2010, which called for proactive

measures to increase investments in agriculture for accelerated economic growth.

38. It is in the same vein that the Heads of States and Governments have come back to reiterate the paramount importance of agri-led transformation for Africa. The promotion and development of strategic food and agricultural commodities in Africa, the theme of this paper, fits well in the context of the Malabo declaration. It emphasized the pursuit of agriculture-led growth as a main strategy to achieve targets on food and nutrition security and shared prosperity. The Heads of States committed themselves, first, “to create and enhance necessary appropriate policy and institutional conditions and support systems for facilitation of private investment in agriculture, agribusiness and agro industries, by giving priority to local investors”; second, “to accelerate agricultural growth by at least doubling current agricultural productivity levels, by 2025.

IV. Conclusions and recommendations

A. Conclusion

39. In the ECOWAS region, pilot country case studies for small ruminant livestock (Burkina Faso, Côte d’Ivoire, Mali, the Niger and Senegal) and in the COMESA/SADC regions for livestock and livestock products (Botswana and Ethiopia) have uncovered challenges and opportunities and highlighted potential in terms of value addition, transformation, and integration. Mali and the Niger stood out as having great potential in developing regional value chains in livestock production and marketing, as did Botswana and Ethiopia. These two countries could be transformed into the livestock belt of Africa. With regard to maize and rice in both regions, the scope of the studies were different as the COMESA maize study was in Uganda, the United Republic of Tanzania, Zimbabwe and Malawi and did not include any element of analysis of greenhouse gas emissions along the value chain, while in the ECOWAS studies in both maize (Benin, Côte d’Ivoire, Ghana and Mali) and rice (Côte d’Ivoire, Ghana, Senegal) the study included an analysis of emissions. This was an innovative addition to the studies as climate change is becoming a new game changer and needs to be taken into consideration in Africa’s transformative and development agenda. In the ECOWAS studies, Ghana and Benin stood out as countries with great potentialities in maize farming and Ghana and Senegal for rice farming. In COMESA, maize, the main staple, showed great potential in the United Republic of Tanzania, Zimbabwe and Malawi. But Egypt, which was not in this study, seems to have the greatest potential to produce maize massively (UNCTAD, 2013).

B. Recommendations

40. The main recommendations from these different studies in the three pilot regional economic communities are:

- (i) To implement a set of measures that will promote national integrated value chains first, then strengthen regional value chains by removing barriers to regional food trade along the value chain;
- (ii) To define a programme of enhanced dialogue on regional strategic food preferential zones of production and regional trade that leads to a set of rules and disciplines on government interventions into regional agricultural trade;

- (iii) To provide greater certainty for private sector actors to make investment decisions that increase productivity taking into account emissions and trade of staple foods.

41. This must be accompanied by a harmonized regulatory and policy framework, harmonized standards and other measures, as well as a commitment to eventually eliminate all non-tariff barriers to regional trade.

42. The way forward will be informed by the implementation of the free trade areas and the continental free trade area, as Africa's transformative agenda should be supported by an integrated regional value chain regulatory policy framework which will upgrade Africa's regional capacities and increase the region's value addition component in traded commodities.