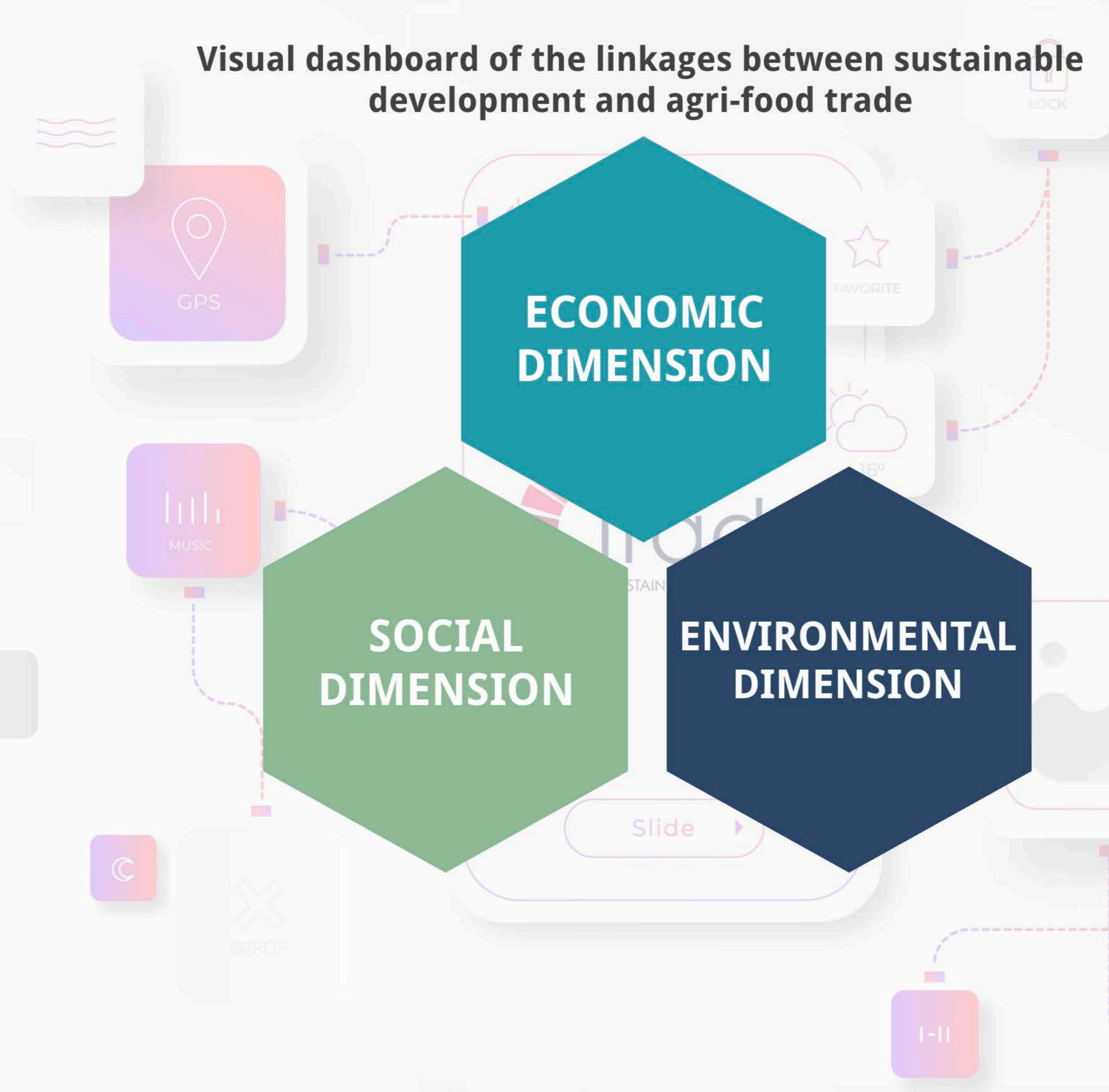


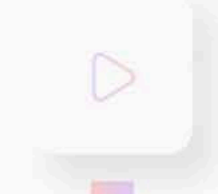
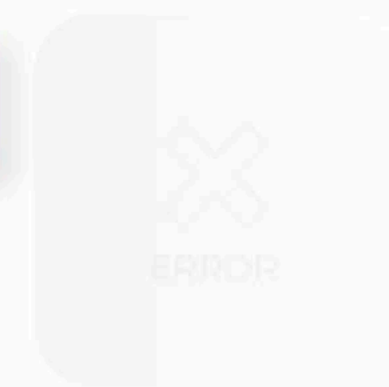
# Visual dashboard of the linkages between sustainable development and agri-food trade



Data source: **reference to D1.1.**

**Legal notice:** this dashboard was prepared in the framework of the TRADE4SD project, which received funding from the European Union Horizon 2020 research and innovation programme under grant agreement No 101000551. The dashboard is constantly updated based on the WP3 and WP4

Trade liberalisation can directly and indirectly contribute to economic growth. Economic sustainability has been predominant in the analyses according to the database of 224 journal articles relating to the overall international trade of products and services.



## ECONOMIC DIMENSION

Markets and Value chains

Policies and governance

Economic development & Growth

One of the central issues analysed by the economic literature is related to markets and value chains, whereby agri-food trade has different impacts on related SDGs.

Trade-led economic growth enhances a country's income-generating capacity, which is one of the most important prerequisites for achieving sustainable development.

Mainstreaming trade requires a joint effort to integrate trade into the various dimensions of economic policy making.



■ POSITIVE LINKAGES  
■ NEGATIVE LINKAGES

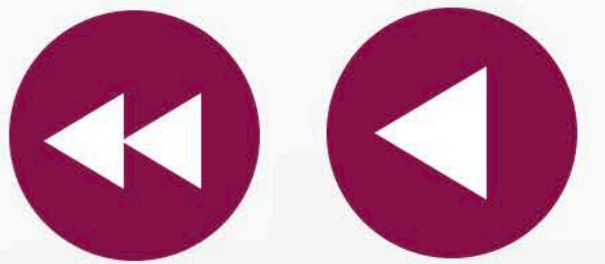
# Markets and Value chains



DIRECT LINKAGES



INDIRECT LINKAGES



# Markets and Value chains

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

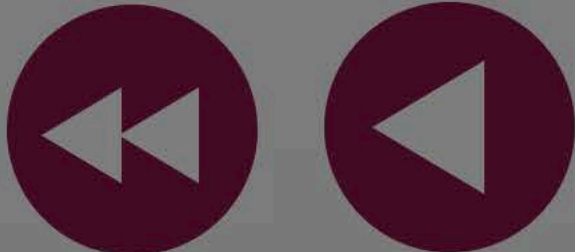
1. Alharthi, M., & Hanif, I. (2020).
2. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021).
3. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
4. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).
5. Kaplinsky, R., & Morris, M. (2018).
6. Chiputwa, B., & Qaim, M. (2016).



## INDIRECT LINKAGES

1. Borsellino, V., Schimmenti, E., & El Bilali, H. (2020).
2. González-Ramírez, M. G., Santoyo-Cortés, V. H., Arana-Coronado, J. J., & Muñoz-Rodríguez, M. (2020).
3. Chiputwa, B., & Qaim, M. (2016).
4. Chiputwa, B., Spielman, D. J., & Qaim, M. (2015).
5. Lee, J., Gereffi, G., & Beauvais, J. (2012).

DIRECT LINKAGES

INDIRECT LINKAGES



-  POSITIVE LINKAGES
-  NEGATIVE LINKAGES

# Markets and Value chains



## DIRECT LINKAGES

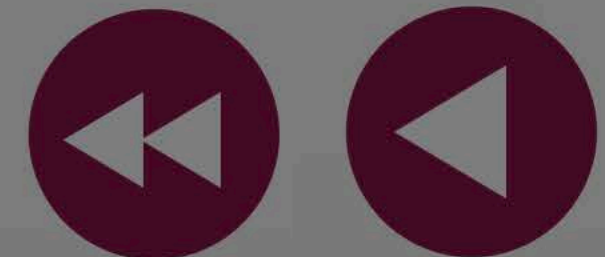
1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
2. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).
3. González-Ramírez, M. G., Santoyo-Cortés, V. H., Arana-Coronado, J. J., & Muñoz-Rodríguez, M. (2020).
4. Pietrzyck, K., Jarzębowski, S., & Petersen, B. (2021).
5. Weersink, A., von Massow, M., Bannon, N., Ifft, J., Maples, J., McEwan, K., . . . Wood, K. (2021).
6. Kaplinsky, R., & Morris, M. (2018).
7. Lerner, D. G., Pereira, H. M. F., Saes, M. S. M., & de Oliveira, G. M. (2021).

## INDIRECT LINKAGES

1. Chiputwa, B., & Qaim, M. (2016).
2. Chiputwa, B., Spielman, D. J., & Qaim, M. (2015).
3. Roy, C. K., Xiaoling, H., & Banik, B. (2021).

DIRECT LINKAGES

INDIRECT LINKAGES



- POSITIVE LINKAGES
- NEGATIVE LINKAGES

# Markets and Value chains



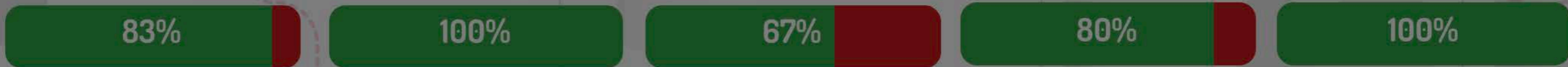
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- 1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
- 1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
- 2. Kaplinsky, R., & Morris, M. (2018).

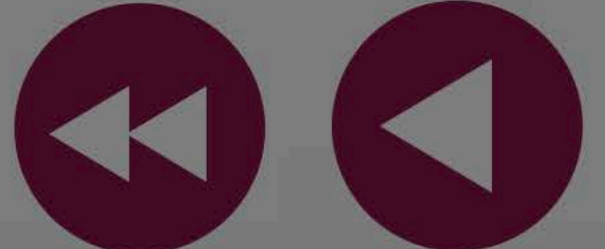
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- 1. González-Ramírez, M. G., Santoyo-Cortés, V. H., Arana-Coronado, J. J., & Muñoz-Rodríguez, M. (2020).
- 2. Chiputwa, B., & Qaim, M. (2016).

DIRECT LINKAGES



INDIRECT LINKAGES



# Markets and Value chains

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

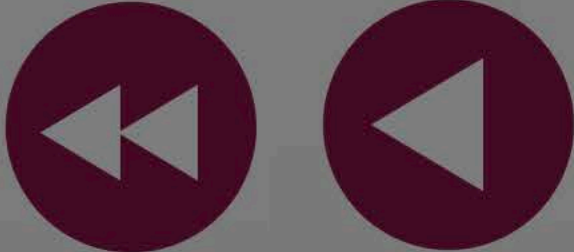
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3. Chiputwa, B., Spielman, D. J., & Qaim, M. (2015).

DIRECT LINKAGES

INDIRECT LINKAGES





# Markets and Value chains

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

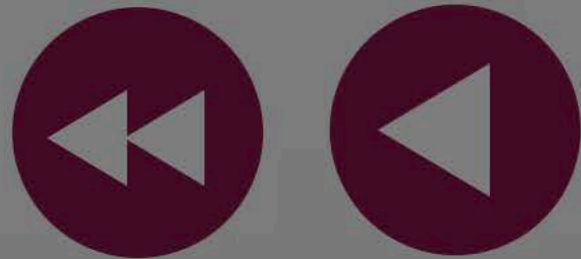
1. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021).
2. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
3. Chiputwa, B., & Qaim, M. (2016).
4. Chiputwa, B., Spielman, D. J., & Qaim, M. (2015).
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### INDIRECT LINKAGES

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DIRECT LINKAGES

INDIRECT LINKAGES



**POSITIVE LINKAGES**

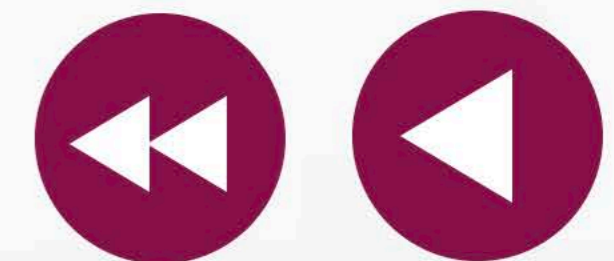
**NEGATIVE LINKAGES**

# Economic development & Growth



DIRECT LINKAGES

INDIRECT LINKAGES



# Economic development & Growth

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

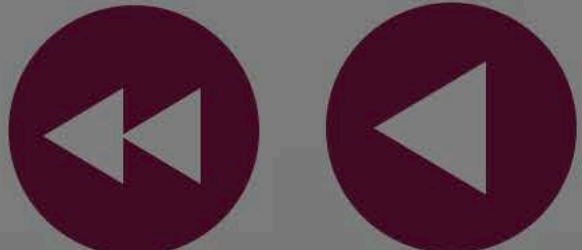
1. Alharthi, M., & Hanif, I. (2020).
2. Ali, U., Li, Y., Yánez Morales, V. P., & Hussain, B. (2021).
3. Aswani, R. S., Sajith, S., & Bhat, M. Y. (2021).
4. Barrera, A. G. (2020).
5. Charoenrat, T., & Pholphirul, P. (2020).
6. Tumaneng-Diete, T., Ferguson, I. S., & MacLaren, D. (2005)
7. Pérez Neira, D., Simón Fernández, X., Copena Rodríguez, D., Soler Montiel, M., & Delgado Cabeza, M. (2014).
8. Kumi, E., Arhin, A. A., & Yeboah, T. (2014)
9. Riekhof, M. C., Regnier, E., & Quaas, M. F. (2019).

## INDIRECT LINKAGES

1. Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021).
2. Skerritt, D. J., & Sumaila, U. R. (2021).
3. Visbeck, M., Kronfeld-Goharani, U., Neumann, B., Rickels, W., Schmidt, J., van Doorn, E., . . . Quaas, M. F. (2014).
4. Miglietta, P. P., & Morrone, D. (2018).
5. Meemken, E.-M., Spielman, D. J., & Qaim, M. (2017).
6. Valdivia, R. O., Antle, J. M., & Stoorvogel, J. J. (2017).

DIRECT LINKAGES

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# Economic development & Growth

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

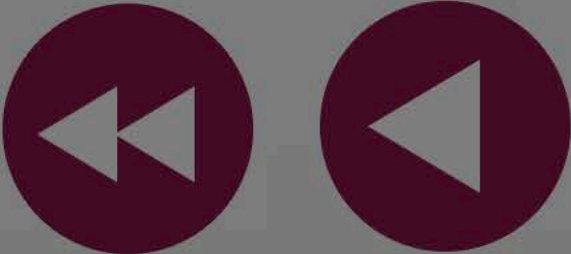
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2. Barrera, A. G. (2020).
3. Charoenrat, T., & Pholphirul, P. (2020).
4. Zhan, J. X., & Santos-Paulino, A. U. (2021).
5. Machingura, F., & Lally, S. (2017).

## INDIRECT LINKAGES

1. Aswani, R. S., Sajith, S., & Bhat, M. Y. (2021).
2. Skerritt, D. J., & Sumaila, U. R. (2021).
3. Visbeck, M., Kronfeld-Goharani, U., Neumann, B., Rickels, W., Schmidt, J., van Doorn, E., . . . Quaas, M. F. (2014).

DIRECT LINKAGES

INDIRECT LINKAGES



- POSITIVE LINKAGES
- NEGATIVE LINKAGES

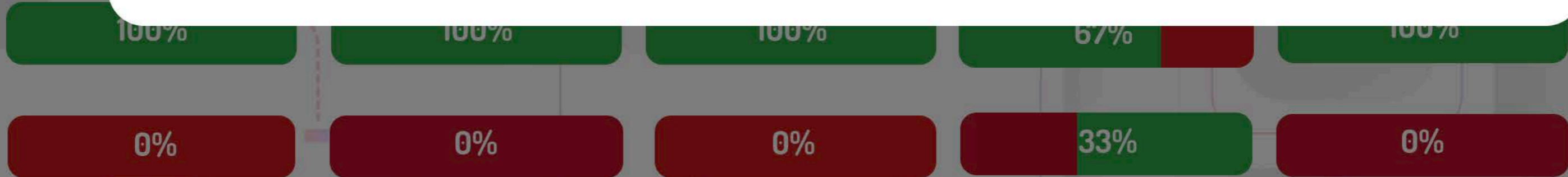
# Economic development & Growth



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<p>1. Barrera, A. G. (2020).</p>	<p>1. Valdivia, R. O., Antle, J. M., &amp; Stoorvogel, J. J. (2017).</p> <p>2. Miglietta, P. P., &amp; Morrone, D. (2018).</p> <p>3. Meemken, E.-M., Spielman, D. J., &amp; Qaim, M. (2017).</p> <p>4. Kumi, E., Arhin, A. A., &amp; Yeboah, T. (2014).</p>

DIRECT LINKAGES

INDIRECT LINKAGES



# Economic development & Growth

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

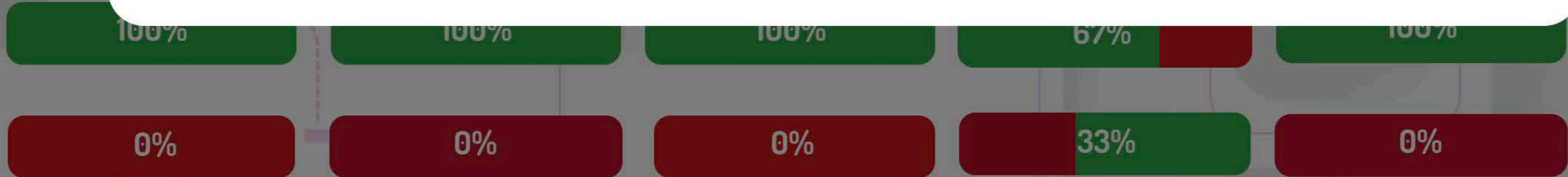
- 1. Adedoyin, F. F., Alola, A. A., & Bekun, F. V. (2021).
- 1. Adedoyin, F. F., Alola, A. A., & Bekun, F. V. (2021).
- 2. Barrera, A. G. (2020).

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- 1. Bhavsar, A., Diallo, C., & Ülkü, M. A. (2021).
- 2. Valdivia, R. O., Antle, J. M., & Stoorvogel, J. J. (2017).
- 3. Miglietta, P. P., & Morrone, D. (2018).

DIRECT LINKAGES

INDIRECT LINKAGES



## Economic

POSITIVE LINKAGES

NEGATIVE LINKAGES

### DIRECT LINKAGES

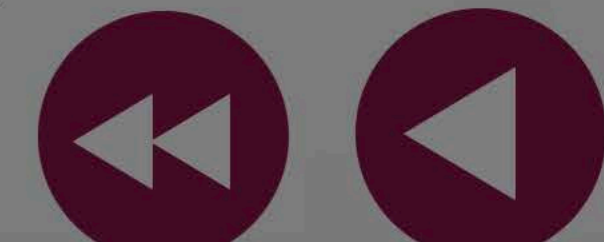
1. Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021).
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### INDIRECT LINKAGES

1. Adedoyin, F. F., Alola, A. A., & Bekun, F. V. (2021).
2. Aldakhil, A. M., Zaheer, A., Younas, S., Nassani, A. A., Abro, M. M. Q., & Zaman, K. (2019).
3. Alharthi, M., & Hanif, I. (2020).
4. Ali, U., Li, Y., Yánez Morales, V. P., & Hussain, B. (2021).
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9. Machingura, F., & Lally, S. (2017).

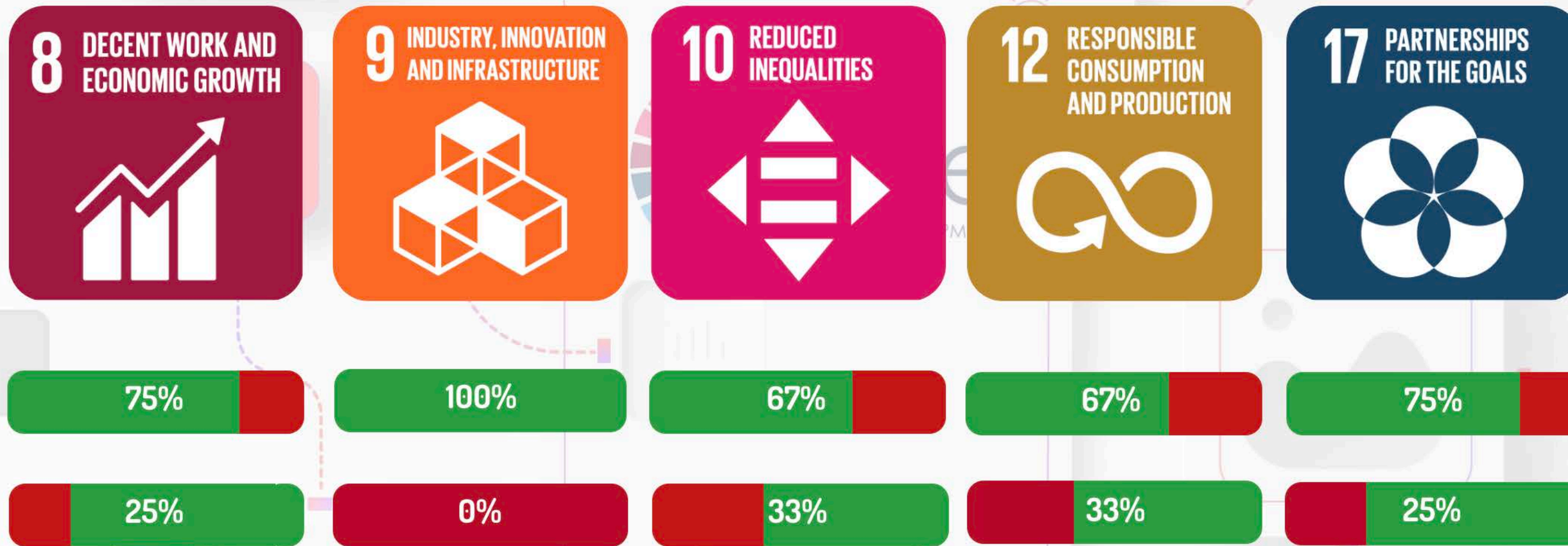
DIRECT LINKAGES

INDIRECT LINKAGES



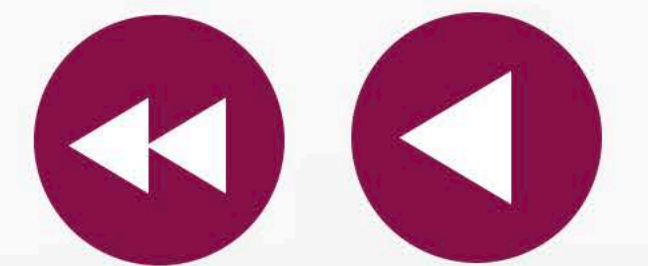
 POSITIVE LINKAGES  
 NEGATIVE LINKAGES

# Policies and governance



DIRECT LINKAGES

INDIRECT LINKAGES





POSITIVE LINKAGES

NEGATIVE

## Policies and governance



### DIRECT LINKAGES

1. Adedoyin, F. F., Alola, A. A., & Bekun, F. V. (2021).
2. Alharthi, M., & Hanif, I. (2020).
3. Ali, U., Li, Y., Yánez Morales, V. P., & Hussain, B. (2021).
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5. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
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6. Ghislain, S. (2021).
7. Lamastra, L., Miglietta, P. P., Toma, P., De Leo, F., & Massari, S. (2017).
7. Lamastra, L., Miglietta, P. P., Toma, P., De Leo, F., & Massari, S. (2017).
8. Roy, C. K., Xiaoling, H., & Banik, B. (2021).
8. Roy, C. K., Xiaoling, H., & Banik, B. (2021).
9. Lewis, D. J., Yang, X. H., Moise, D., & Roddy, S. J. (2021).
9. Lewis, D. J., Yang, X. H., Moise, D., & Roddy, S. J. (2021).
10. Monkelbaan, J. (2017).
11. Latka, C., Heckeley, T., Kuhn, A., Witzke, H.-P., & Kornher, L. (2021).

### INDIRECT LINKAGES

1. Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021).
2. Sumaila, U. R., Ebrahim, N., Schuhbauer, A., Skerritt, D., Li, Y., Kim, H. S., . . . Pauly, D. (2019).
3. Serrano, A., & Valbuena, J. (2021).
4. Galli, F., Prospero, P., Favilli, E., D'Amico, S., Bartolini, F., & Brunori, G. (2020).

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INDIRECT LINK



# Policies and governance

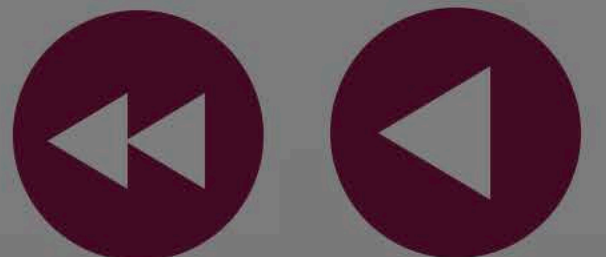
- POSITIVE LINKAGES
- NEGATIVE LINKAGES



DIRECT LINKAGES	INDIRECT LINKAGES
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DIRECT LINKAGES

INDIRECT LINKAGES



# Policies and governance

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

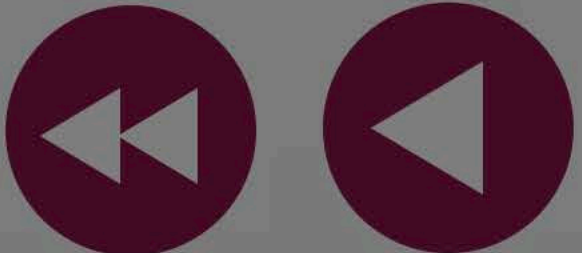
- 1. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
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## INDIRECT LINKAGES

- 1. Galli, F., Prosperi, P., Favilli, E., D'Amico, S., Bartolini, F., & Brunori, G. (2020).
- 2. Matthews, A. (2020).

DIRECT LINKAGES

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# Policies and governance

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- NEGATIVE LINKAGES



## DIRECT LINKAGES

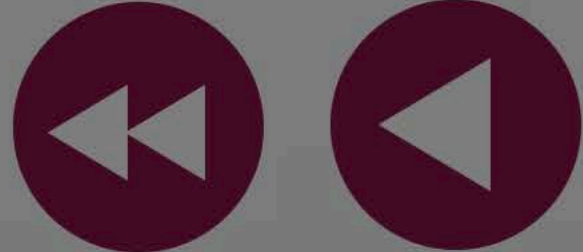
1. Adedoyin, F. F., Alola, A. A., & Bekun, F. V. (2021).
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DIRECT LINKAGES

INDIRECT LINKAGES



# Policies and governance

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

## INDIRECT LINKAGES

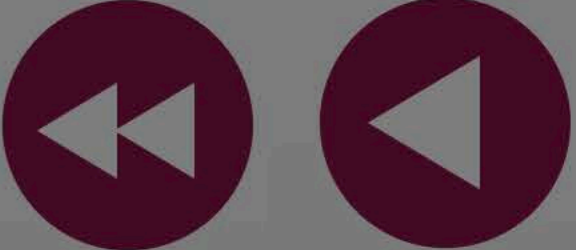
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3. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
3. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
4. Verter, N. (2019).
5. Galli, F., Prosperi, P., Favilli, E., D'Amico, S., Bartolini, F., & Brunori, G. (2020).
6. Matthews, A. (2020).
7. Philippidis, G., Shutes, L., M'Barek, R., Ronzon, T., Tabeau, A., & van Meijl, H. (2020).

1. Adedoyin, F. F., Alola, A. A., & Bekun, F. V. (2021).
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3. Ali, U., Li, Y., Yánez Morales, V. P., & Hussain, B. (2021).
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4. Aswani, R. S., Sajith, S., & Bhat, M. Y. (2021).
5. Monkelbaan, J. (2017).



DIRECT LINKAGES

INDIRECT LINKAGES





**ECONOMIC  
DIMENSION**

**SOCIAL  
DIMENSION**

**ENVIRONMENTAL  
DIMENSION**

Trade also plays a crucial role in addressing the social challenges of sustainability like hunger, food security, healthy lives, wellbeing, or employment. Both developed and developing countries benefit from trade and thanks to the trade gains, developing countries have experienced an unprecedented growth of the middle class despite the fact that their share in world trade is still low.

**FOOD & NUTRITION SECURITY**

**SOCIAL DIMENSION**

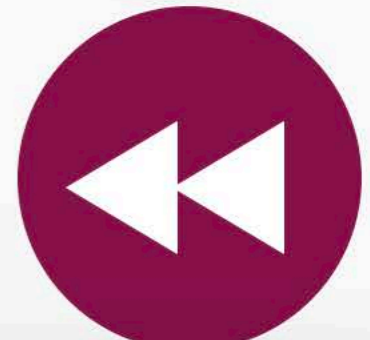
**LIVELIHOODS & WELLBEING**

**LABOUR & EMPLOYMENT**

The ever-increasing population growth and the increased risk of epidemics pose new societal challenges, perhaps the most important of which is food and nutrition security.

Although agricultural employment is relatively low compared to total employment in developed countries, agriculture remains the largest source of employment in many developing countries, having mixed impacts on the relationship between agri-food trade and the SDGs.

Many aspects of international trade can contribute to livelihood and wellbeing, directly to SDG 3 (Good Health and Well-being), or through reaching the targets of other SDGs



■ POSITIVE LINKAGES  
■ NEGATIVE LINKAGES

# FOOD & NUTRITION SECURITY

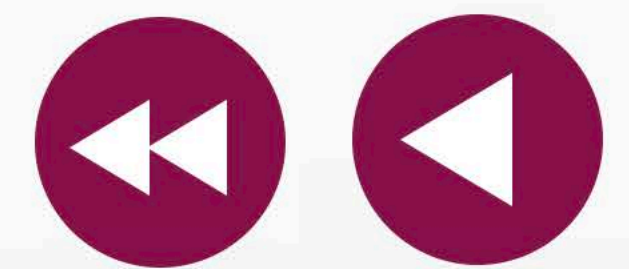


DIRECT LINKAGES

INDIRECT LINKAGES

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# FOOD & NUTRITION SECURITY



POSITIVE LINKAGES



NEGATIVE LINKAGES



## DIRECT LINKAGES

## INDIRECT LINKAGES

<p>1. Ayompe, L. M., Schaafsma, M., &amp; Egoh, B. N. (2021).</p> <p>1. Ayompe, L. M., Schaafsma, M., &amp; Egoh, B. N. (2021).</p> <p>2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).</p> <p>2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).</p> <p>3. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., &amp; Jiménez Aceituno, A. (2021).</p>	<p>3. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., &amp; Jiménez Aceituno, A. (2021).</p> <p>4. Philippidis, G., Shutes, L., M'Barek, R., Ronzon, T., Tabeau, A., &amp; van Meijl, H. (2020).</p> <p>4. Philippidis, G., Shutes, L., M'Barek, R., Ronzon, T., Tabeau, A., &amp; van Meijl, H. (2020).</p> <p>5. Sharma, P., &amp; Kumar, S. N. (2020).</p> <p>5. Sharma, P., &amp; Kumar, S. N. (2020).</p> <p>6. Valdivia, R. O., Antle, J. M., &amp; Stoorvogel, J. J. (2017).</p> <p>6. Valdivia, R. O., Antle, J. M., &amp; Stoorvogel, J. J. (2017).</p> <p>7. Verter, N. (2019).</p>
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1. Bacon, C. M., Méndez, V. E., Gómez, M. E. F., Stuart, D., & Flores, S. R. D. (2008).

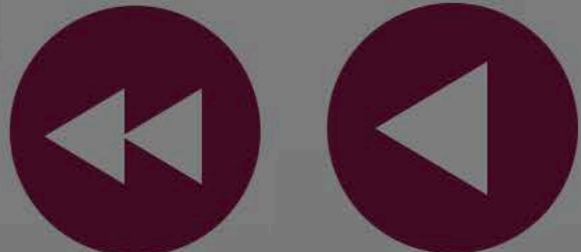
2. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).

2. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).

3. Chiputwa, B., & Qaim, M. (2016).

3. Chiputwa, B., & Qaim, M. (2016).

4. Govereh, J., & Jayne, T. S. (2003).



## DIRECT LINKAGES

1. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021).
2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
3. Campi, M., Dueñas, M., & Fagiolo, G. (2021).
3. Campi, M., Dueñas, M., & Fagiolo, G. (2021).
4. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
4. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
5. Philippidis, G., Shutes, L., M'Barek, R., Ronzon, T., Tabeau, A., & van Meijl, H. (2020).
5. Philippidis, G., Shutes, L., M'Barek, R., Ronzon, T., Tabeau, A., & van Meijl, H. (2020).
6. Sharma, P., & Kumar, S. N. (2020).
6. Sharma, P., & Kumar, S. N. (2020).
7. Borsellino, V., Schimmenti, E., & El Bilali, H. (2020).
7. Borsellino, V., Schimmenti, E., & El Bilali, H. (2020).
8. Ge, J., Polhill, J. G., Macdiarmid, J. I., Fitton, N., Smith, P., Clark, H., . . . Aphale, M. (2021).
9. Verter, N. (2019).
10. Rahman, S., F., Singh, S., McCordic, C. (2022)

## INDIRECT LINKAGES

1. Bacon, C. M., Méndez, V. E., Gómez, M. E. F., Stuart, D., & Flores, S. R. D. (2008).
2. Tian, Z., Ji, Y., Xu, H., Qiu, H., Sun, L., Zhong, H., & Liu, J. (2021).
2. Tian, Z., Ji, Y., Xu, H., Qiu, H., Sun, L., Zhong, H., & Liu, J. (2021).
3. Duarte, R., Pinilla, V., & Serrano, A. (2019).
3. Duarte, R., Pinilla, V., & Serrano, A. (2019).
4. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).
4. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).
5. Asche, F., Bellemare, M. F., Roheim, C., Smith, M. D., & Tveteras, S. (2015).
5. Asche, F., Bellemare, M. F., Roheim, C., Smith, M. D., & Tveteras, S. (2015).
6. Chiputwa, B., & Qaim, M. (2016).
6. Chiputwa, B., & Qaim, M. (2016).
7. Gema, J., Keige, J., Ngetich, T., Moreno Echeverri, I., Saavedra Gonzalez, Y., & Koomen, I. (2018).
8. Govereh, J., & Jayne, T. S. (2003).
9. Latka, C., Heckeley, T., Kuhn, A., Witzke, H.-P., & Kornher, L. (2021).
9. Latka, C., Heckeley, T., Kuhn, A., Witzke, H.-P., & Kornher, L. (2021).
10. Mrdalj, V., & El Bilali, H. (2021).
10. Mrdalj, V., & El Bilali, H. (2021).



# FOOD & NUTRITION SECURITY

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

## INDIRECT LINKAGES

1. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).

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DIRECT LINKAGES

INDIRECT LINKAGES

DIRECT LINKAGES

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# FOOD & NUTRITION SECURITY

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

### INDIRECT LINKAGES

1. Gema, J., Keige, J., Ngetich, T., Moreno Echeverri, I., Saavedra Gonzalez, Y., & Koomen, I. (2018).

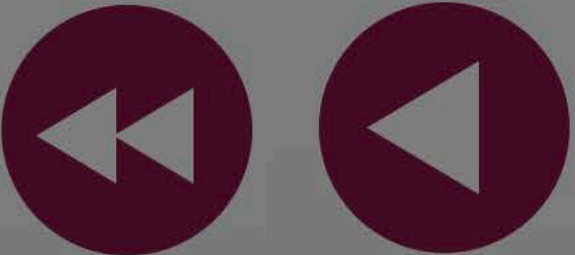
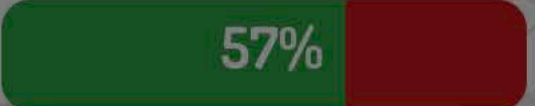
1. Gema, J., Keige, J., Ngetich, T., Moreno Echeverri, I., Saavedra Gonzalez, Y., & Koomen, I. (2018).

**7** AFFORDABLE AND CLEAN ENERGY

**11** SUSTAINABLE CITIES AND COMMUNITIES

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

**17** PARTNERSHIPS FOR THE GOALS



# FOOD & NUTRITION SECURITY

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

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DIRECT LINKAGES	INDIRECT LINKAGES
<p>1. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).</p>	<p>1. Chiputwa, B., &amp; Qaim, M. (2016).  <span style="color: red;">1. Chiputwa, B., &amp; Qaim, M. (2016).</span></p>

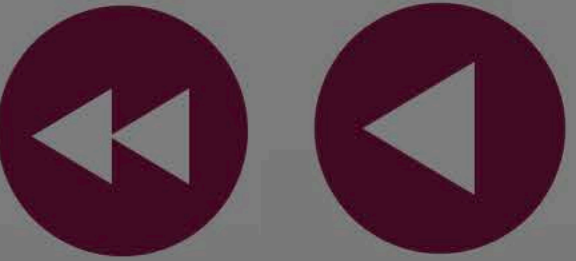
DIRECT LINKAGES



INDIRECT LINKAGES



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-  POSITIVE LINKAGES
-  NEGATIVE LINKAGES

# FOOD & NUTRITION SECURITY



DIRECT LINKAGES	INDIRECT LINKAGES
	1. Tian, Z., Ji, Y., Xu, H., Qiu, H., Sun, L., Zhong, H., & Liu, J. (2021).

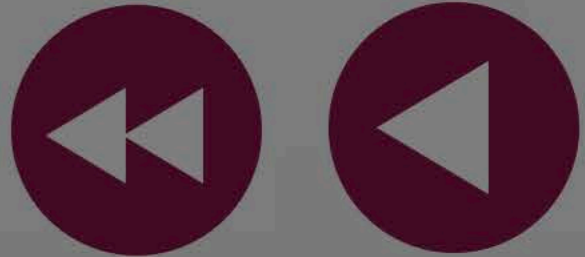
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DIRECT LINKAGES

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# FOOD & NUTRITION SECURITY

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

### INDIRECT LINKAGES

1. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).  
1. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).
2. Wilkinson, J. (2015).  
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3. Galli, F., Prosperi, P., Favilli, E., D'Amico, S., Bartolini, F., & Brunori, G. (2020).

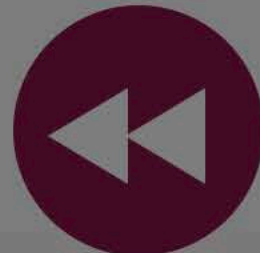


DIRECT LINKAGES

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# FOOD & NUTRITION SECURITY

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

1. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021).
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2. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
2. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
3. Verter, N. (2019).
3. Verter, N. (2019).
4. Philippidis, G., Shutes, L., M'Barek, R., Ronzon, T., Tabeau, A., & van Meijl, H. (2020).

## INDIRECT LINKAGES

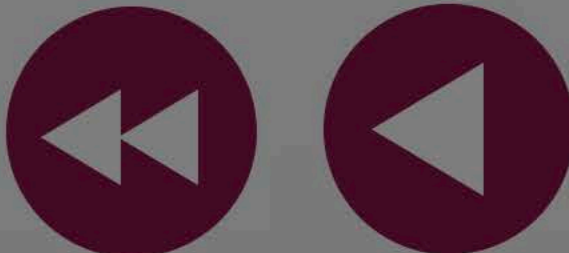
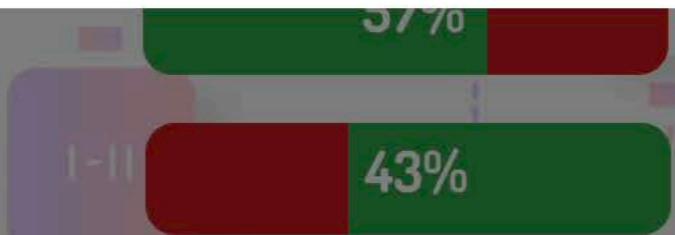
1. Bacon, C. M., Méndez, V. E., Gómez, M. E. F., Stuart, D., & Flores, S. R. D. (2008).
1. Bacon, C. M., Méndez, V. E., Gómez, M. E. F., Stuart, D., & Flores, S. R. D. (2008).
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4. Latka, C., Heckeley, T., Kuhn, A., Witzke, H.-P., & Kornher, L. (2021).

DIRECT LINKAGES



INDIRECT LINKAGES

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-  POSITIVE LINKAGES
-  NEGATIVE LINKAGES

# FOOD & NUTRITION SECURITY



DIRECT LINKAGES	INDIRECT LINKAGES
	

DIRECT LINKAGES

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**7** AFFORDABLE AND CLEAN ENERGY



**11** SUSTAINABLE CITIES AND COMMUNITIES



**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

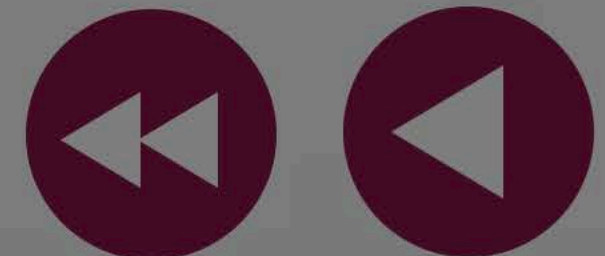


**17** PARTNERSHIPS FOR THE GOALS



DIRECT LINKAGES

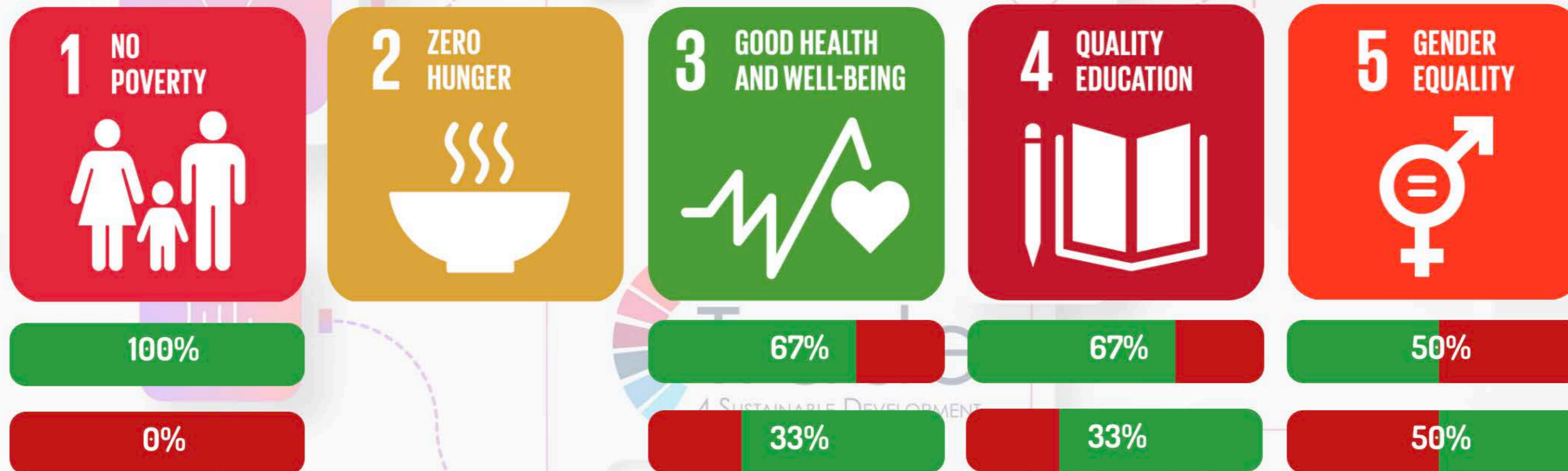
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# LABOUR & EMPLOYMENT



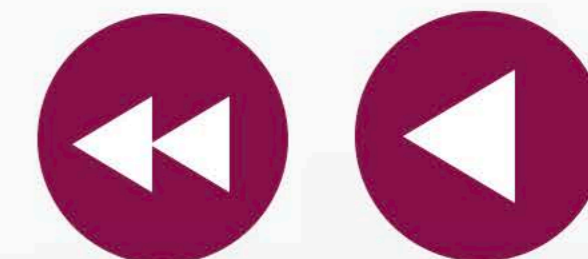
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# LABOUR & EMPLOYMENT

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

1. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021).
2. Bhavsar, A., Diallo, C., & Ülkü, M. A. (2021).
3. Weersink, A., von Massow, M., Bannon, N., Ifft, J., Maples, J., McEwan, K., . . . Wood, K. (2021).

## INDIRECT LINKAGES

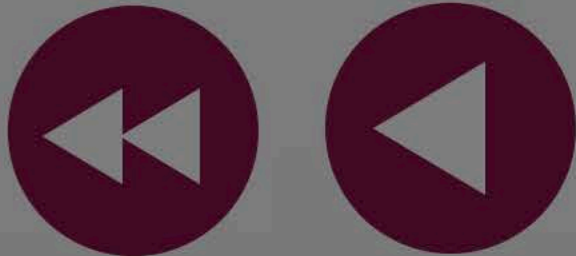
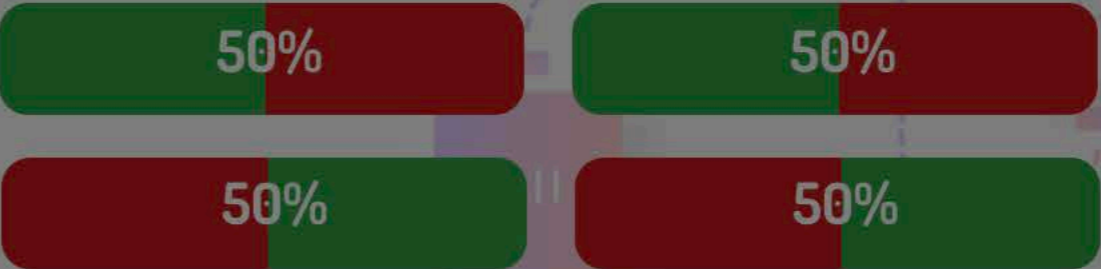
1. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).
1. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020).
2. Whitfield, L. (2017).
2. Whitfield, L. (2017).
3. Yaro, J. A., Teye, J. K., & Torvikey, G. D. (2017).
3. Yaro, J. A., Teye, J. K., & Torvikey, G. D. (2017).

DIRECT LINKAGES

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# LABOUR & EMPLOYMENT

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

### INDIRECT LINKAGES

1. Yaro, J. A., Teye, J. K., & Torvikey, G. D. (2017).

1. Yaro, J. A., Teye, J. K., & Torvikey, G. D. (2017).

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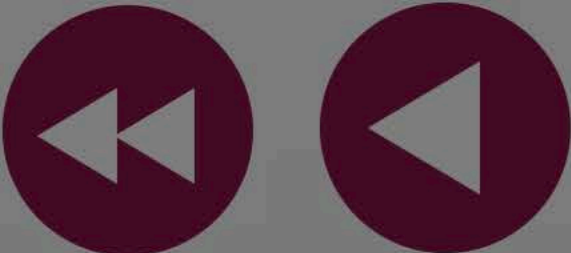
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# LABOUR & EMPLOYMENT

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

- 1. Bhavsar, A., Diallo, C., & Ülkü, M. A. (2021).
- 2. Xiao, Y., Norris, C. B., Lenzen, M., Norris, G., & Murray, J. (2017).
- 2. Xiao, Y., Norris, C. B., Lenzen, M., Norris, G., & Murray, J. (2017).

### INDIRECT LINKAGES

- 1. Yaro, J. A., Teye, J. K., & Torvikey, G. D. (2017).

DIRECT LINKAGES

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DIRECT LINKAGES

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# LABOUR & EMPLOYMENT

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

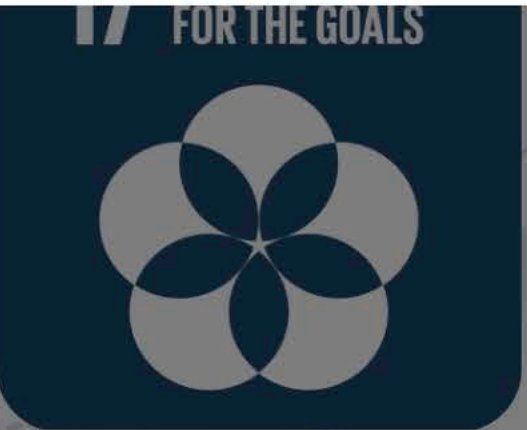
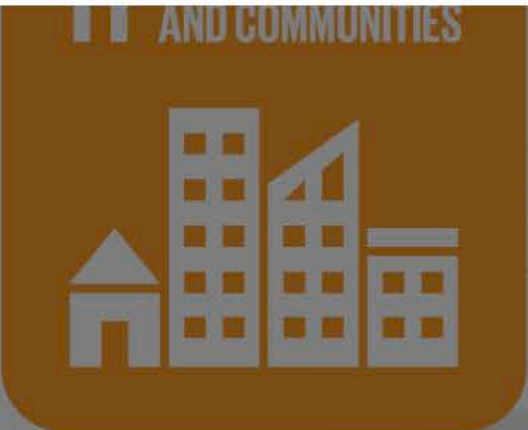
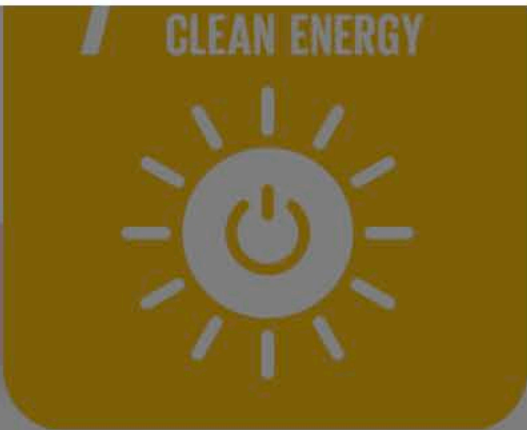
- 1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
- 1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
- 2. Pietrzyck, K., Jarzębowski, S., & Petersen, B. (2021).

### INDIRECT LINKAGES

- 1. Bacon, C. M., Méndez, V. E., Gómez, M. E. F., Stuart, D., & Flores, S. R. D. (2008).

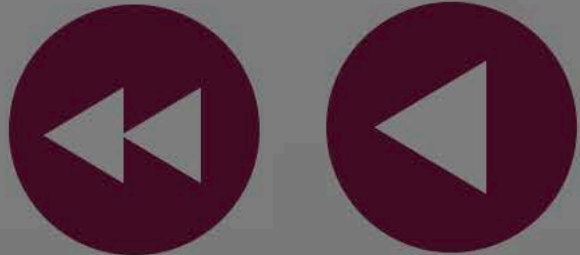
DIRECT LINKAGES

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# LABOUR & EMPLOYMENT

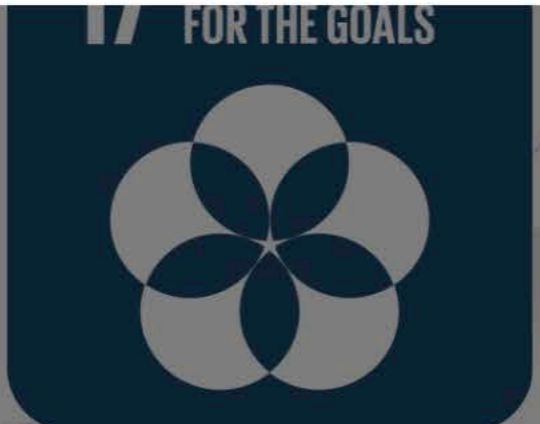
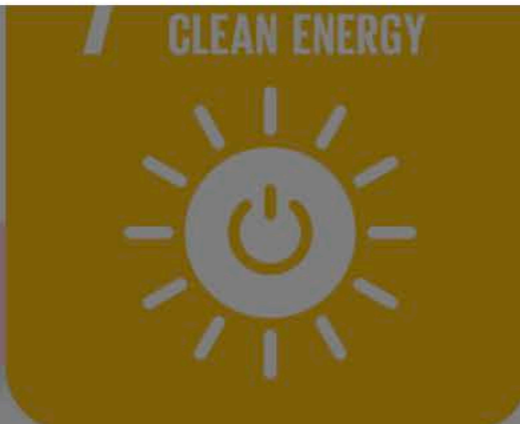
- POSITIVE LINKAGES
- NEGATIVE LINKAGES



DIRECT LINKAGES	INDIRECT LINKAGES
<p>1. Xiao, Y., Norris, C. B., Lenzen, M., Norris, G., &amp; Murray, J. (2017).</p> <p>1. Xiao, Y., Norris, C. B., Lenzen, M., Norris, G., &amp; Murray, J. (2017).</p> <p>2. Roy, C. k. &amp; Xiaoling, H. (2022).</p>	<p>1. Bacon, C. M., Méndez, V. E., Gómez, M. E. F., Stuart, D., &amp; Flores, S. R. D. (2008).</p> <p>1. Bacon, C. M., Méndez, V. E., Gómez, M. E. F., Stuart, D., &amp; Flores, S. R. D. (2008).</p> <p>2. Yaro, J. A., Teye, J. K., &amp; Torvikey, G. D. (2017).</p>

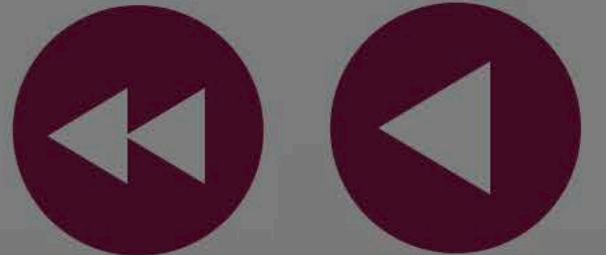
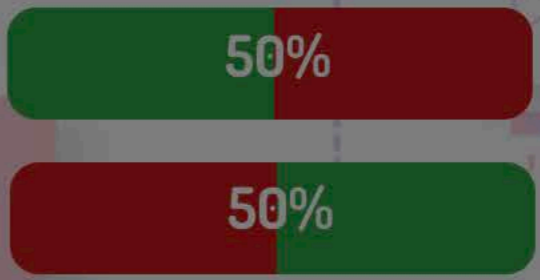
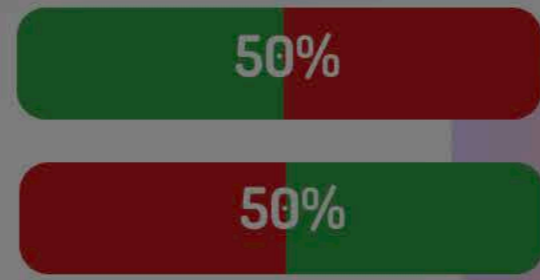
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# LABOUR & EMPLOYMENT

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

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**7** AFFORDABLE AND CLEAN ENERGY

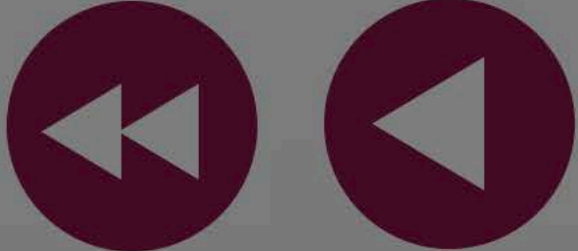
**11** SUSTAINABLE CITIES AND COMMUNITIES

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

**17** PARTNERSHIPS FOR THE GOALS

DIRECT LINKAGES

INDIRECT LINKAGES





# LABOUR & EMPLOYMENT

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

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### DIRECT LINKAGES

### INDIRECT LINKAGES

DIRECT LINKAGES

INDIRECT LINKAGES



**7** AFFORDABLE AND CLEAN ENERGY

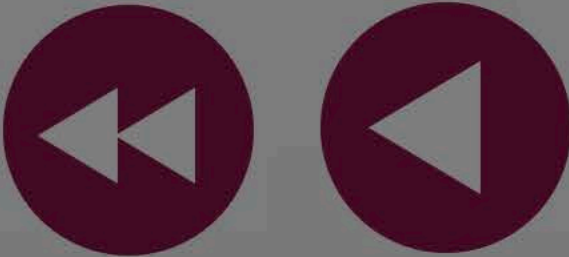
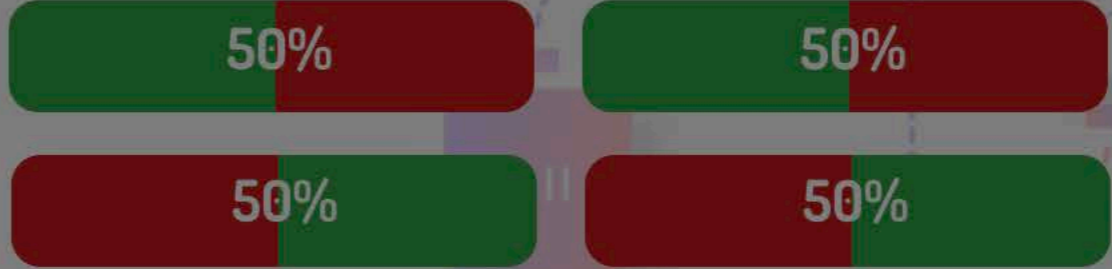
**11** SUSTAINABLE CITIES AND COMMUNITIES

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

**17** PARTNERSHIPS FOR THE GOALS

DIRECT LINKAGES

INDIRECT LINKAGES



# LABOUR & EMPLOYMENT

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

1. Xiao, Y., Norris, C. B., Lenzen, M., Norris, G., & Murray, J. (2017).

1. Xiao, Y., Norris, C. B., Lenzen, M., Norris, G., & Murray, J. (2017).

### INDIRECT LINKAGES



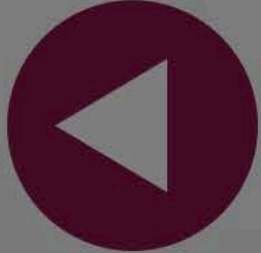
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DIRECT LINKAGES

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# LABOUR & EMPLOYMENT

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

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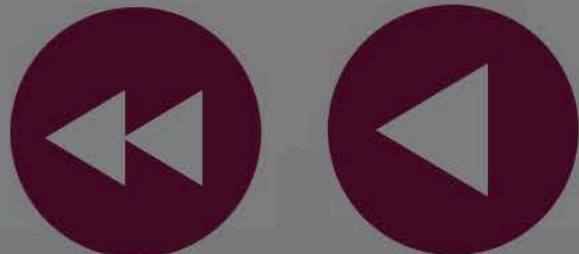
1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).

### INDIRECT LINKAGES



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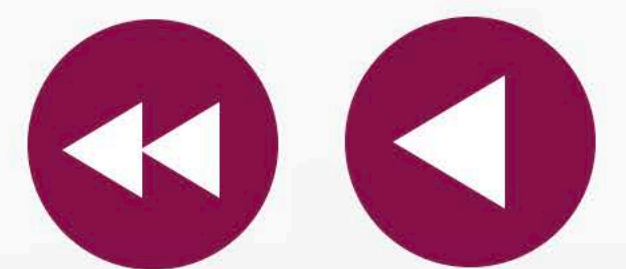
■ POSITIVE LINKAGES  
■ NEGATIVE LINKAGES

# LIVELIHOODS & WELLBEING



DIRECT LINKAGES  
 INDIRECT LINKAGES

DIRECT LINKAGES  
 INDIRECT LINKAGES



# LIVELIHOODS & WELLBEING

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

## INDIRECT LINKAGES

- 1. Bhavsar, A., Diallo, C., & Ülkü, M. A. (2021).
- 2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
- 2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
- 2. Andrianarimanana, M. H., Yongjian, O. (2022)

- 1. Whitfield, L. (2017).
- 1. Whitfield, L. (2017).
- 2. Chiputwa, B., Spielman, D. J., & Qaim, M. (2015).
- 3. Govereh, J., & Jayne, T. S. (2003).
- 4. Lee, J., Gereffi, G., & Beauvais, J. (2012).
- 4. Lee, J., Gereffi, G., & Beauvais, J. (2012).
- 5. Meemken, E.-M., Spielman, D. J., & Qaim, M. (2017).
- 6. Hoang, V., Nguyen, A., Hubbard, C., & Nguyen, K.-D. (2021).
- 7. Weersink, A., von Massow, M., Bannon, N., Ifft, J., Maples, J., McEwan, K., . . . Wood, K. (2021).

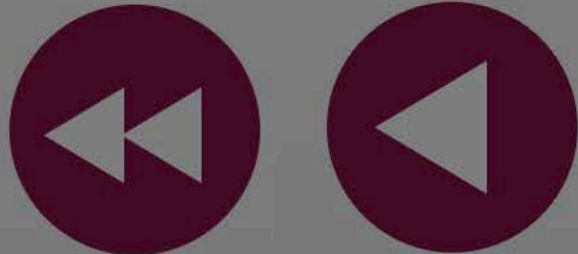


DIRECT LINKAGES

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# LIVELIHOODS & WELLBEING

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

### DIRECT LINKAGES

- 2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
- 2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
- 3. Andrianarimanana, M. H., Yongjian, O. (2022)

### INDIRECT LINKAGES

- 1. Meemken, E.-M., Spielman, D. J., & Qaim, M. (2017).

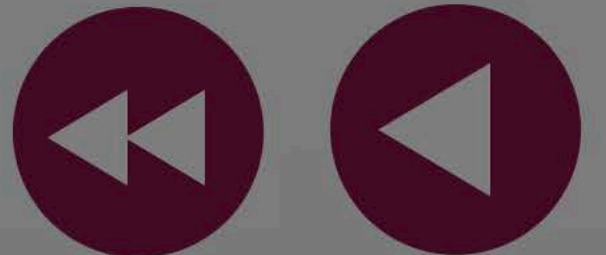
DIRECT LINKAGES

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# LIVELIHOODS & WELLBEING

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

## INDIRECT LINKAGES

1. Bhavsar, A., Diallo, C., & Ülkü, M. A. (2021).
2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
2. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).
3. Corrado, S., Rydberg, T., Oliveira, F., Cerutti, A., & Sala, S. (2020).
3. Corrado, S., Rydberg, T., Oliveira, F., Cerutti, A., & Sala, S. (2020).
4. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
4. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
5. Safaeimanesh, S., & Jenkins, G. P. (2021).

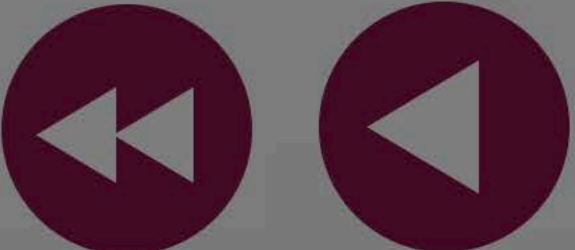
1. Meemken, E.-M., Spielman, D. J., & Qaim, M. (2017).

DIRECT LINKAGES

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- POSITIVE LINKAGES
- NEGATIVE LINKAGES

# LIVELIHOODS & WELLBEING

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- Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).
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- Meemken, E.-M., Spielman, D. J., & Qaim, M. (2017).

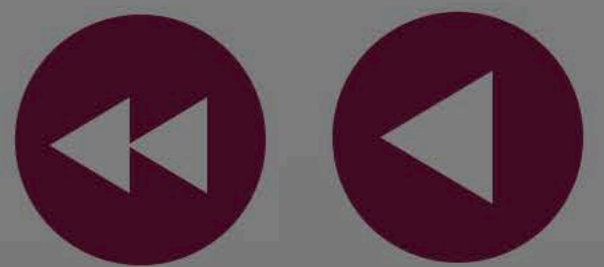
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- POSITIVE LINKAGES
- NEGATIVE LINKAGES

# LIVELIHOODS & WELLBEING

### DIRECT LINKAGES

1. Bellassen, V., Drut, M., Hilal, M., Bodini, A., Donati, M., de Labarre, M. D., . . . Arfini, F. (2021).

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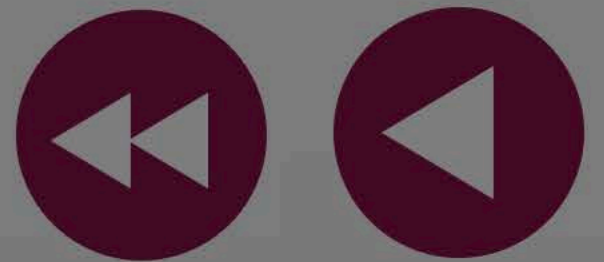
DIRECT LINKAGES

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# LIVELIHOODS & WELLBEING

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

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1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021).

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2. Philippidis, G., Shutes, L., M'Barek, R., Ronzon, T., Tabeau, A., & van Meijl, H. (2020).

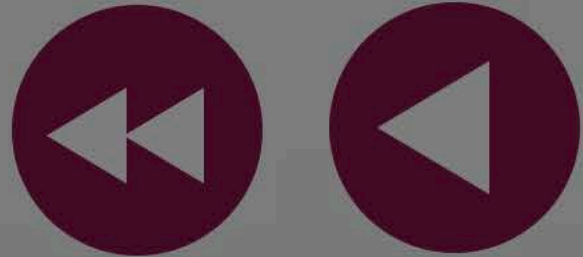
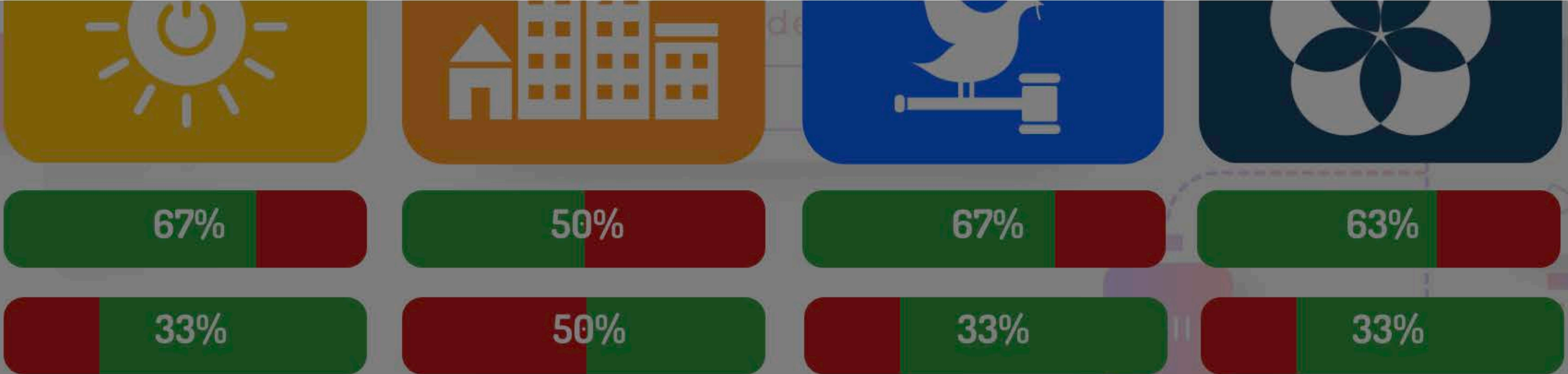
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- POSITIVE LINKAGES
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# LIVELIHOODS & WELLBEING

### DIRECT LINKAGES

1. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021).

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### INDIRECT LINKAGES

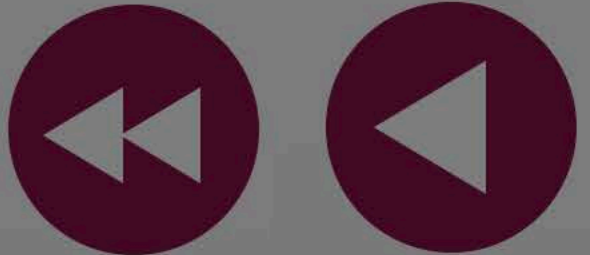
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# LIVELIHOODS & WELLBEING

- POSITIVE LINKAGES
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## DIRECT LINKAGES

## INDIRECT LINKAGES

1. Booth, H., Arias, M., Brittain, S., Challender, D. W. S., Khanyari, M., Kuiper, T., . . . Milner-Gulland, E. J. (2021).

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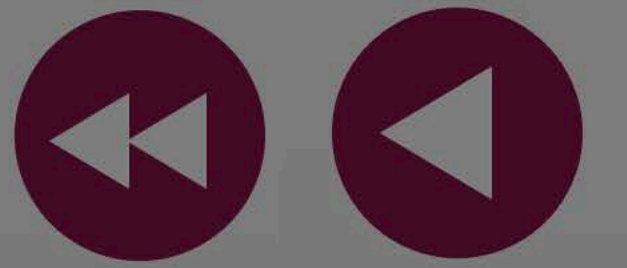
2. Hoang, V., Nguyen, A., Hubbard, C., & Nguyen, K.-D. (2021).

DIRECT LINKAGES

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# LIVELIHOODS & WELLBEING



- POSITIVE LINKAGES
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DIRECT LINKAGES

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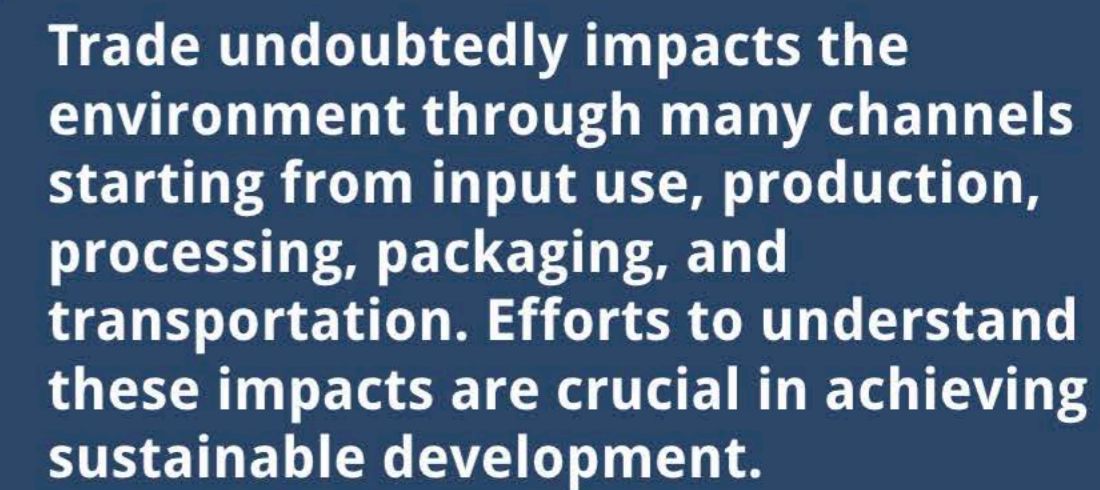
**ECONOMIC  
DIMENSION**



**SOCIAL  
DIMENSION**



**ENVIRONMENTAL  
DIMENSION**



Trade undoubtedly impacts the environment through many channels starting from input use, production, processing, packaging, and transportation. Efforts to understand these impacts are crucial in achieving sustainable development.

**ENVIRONMENTAL  
DIMENSION**

**Biodiversity**

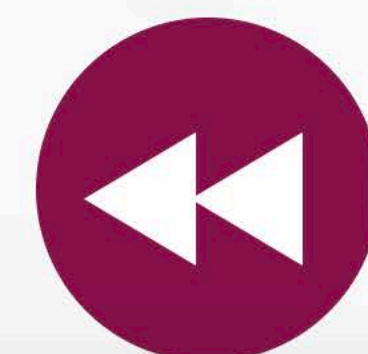
**Renewable  
energy**

**GHG emissions,  
pollution &  
deforestation**

**Agri-food trade has different impacts on biodiversity. In all related SDGs, both direct and indirect as well as positive and negative linkages were identified by the literature.**

**Agri-food trade also have very different impacts on GHG emissions, pollution, and deforestation, with all environmental-related SDGs highly related.**

**Switching from non-renewable sources to renewable ones also result in mixed trade-related impacts.**



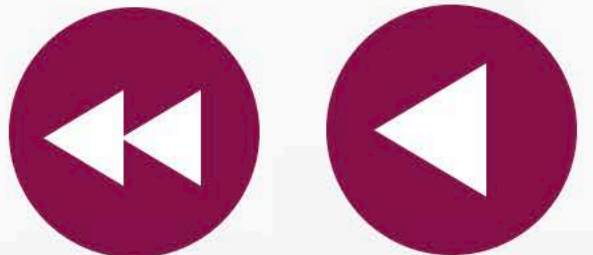
■ POSITIVE LINKAGES  
■ NEGATIVE LINKAGES

# Biodiversity



DIRECT LINKAGES

INDIRECT LINKAGES





- POSITIVE LINKAGES
- NEGATIVE LINKAGES

# Biodiversity

### DIRECT LINKAGES

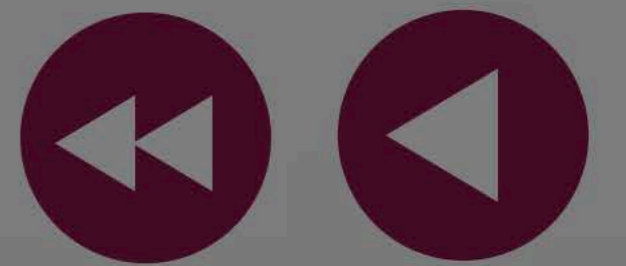
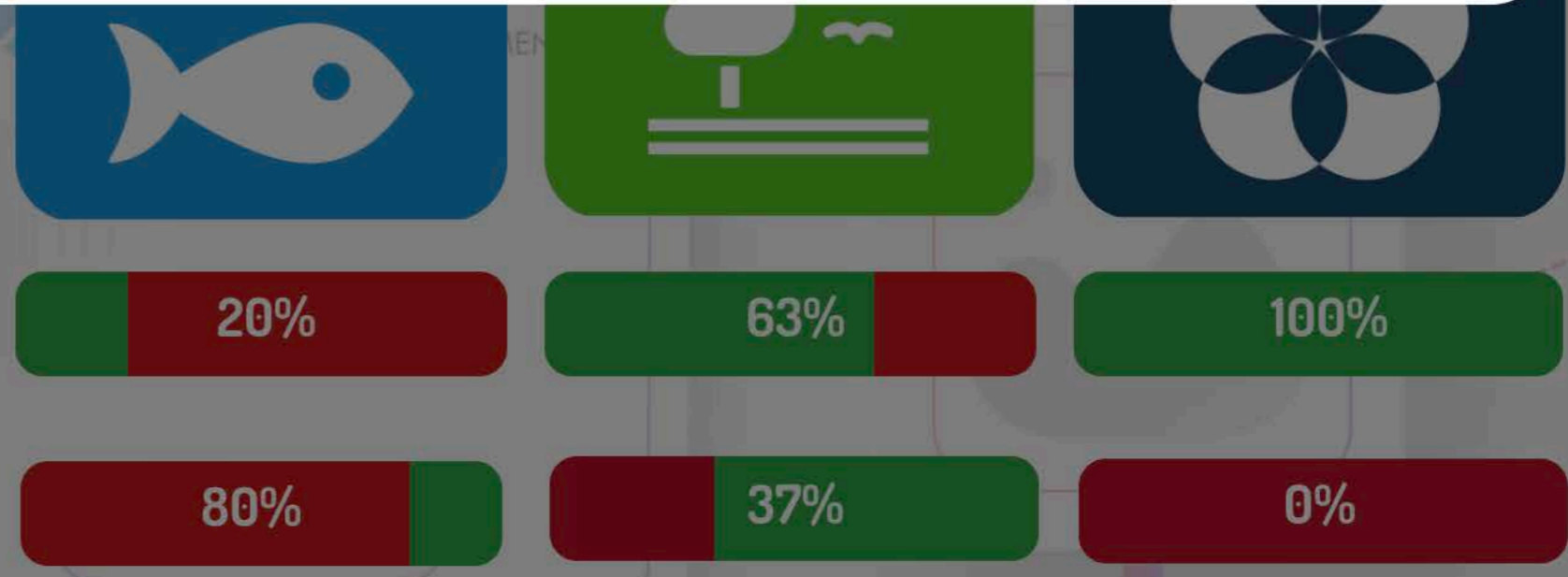
### INDIRECT LINKAGES

1. Galli, F., Prosperi, P., Favilli, E., D'Amico, S., Bartolini, F., & Brunori, G. (2020)



6

DIRECT LINKAGES

INDIRECT LINKAGES



# Biodiversity

-  POSITIVE LINKAGES
-  NEGATIVE LINKAGES

6

### DIRECT LINKAGES

1. Alharthi, M., & Hanif, I. (2020)
2. Singh et al. (2018)
3. Sumaila et al. (2019)
4. Kumar et al. (2019)
5. Andrews et al. (2021)

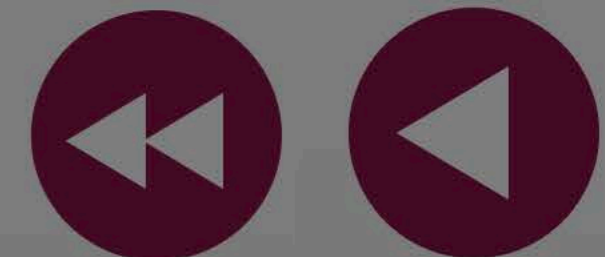
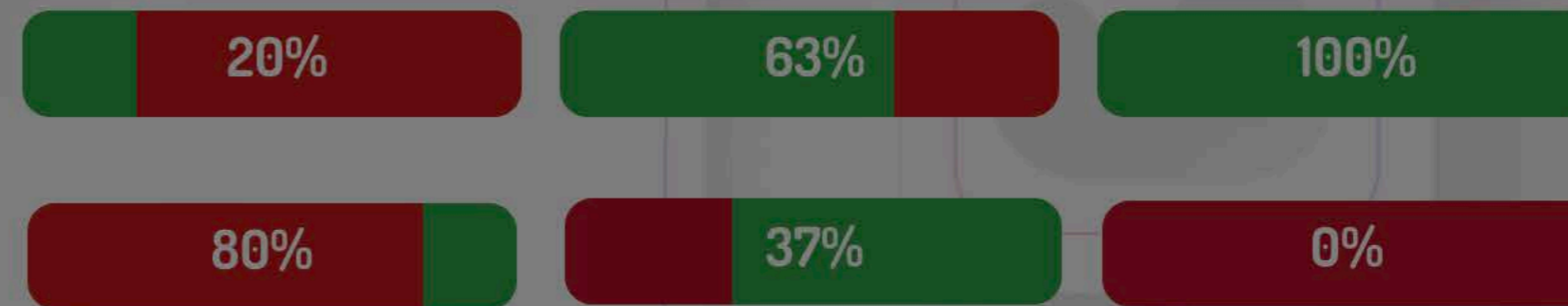
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DIRECT LINKAGES

INDIRECT LINKAGES



# Biodiversity

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

6

## DIRECT LINKAGES

- 1. Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021)
- 1. Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021)
- 2. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021)
- 2. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021)
- 3. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021)
- 4. Machingura, F., & Lally, S. (2017)
- 5. Ortiz, A. M. D., Outhwaite, C. L., Dalin, C., & Newbold, T. (2021)
- 5. Ortiz, A. M. D., Outhwaite, C. L., Dalin, C., & Newbold, T. (2021)

## INDIRECT LINKAGES

- 1. Corrado, S., Rydberg, T., Oliveira, F., Cerutti, A., & Sala, S. (2020)
- 1. Galli, F., Prosperi, P., Favilli, E., D'Amico, S., Bartolini, F., & Brunori, G. (2020)
- 3. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020)



DIRECT LINKAGES

INDIRECT LINKAGES



# Biodiversity

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

6

### DIRECT LINKAGES

- 1. Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021)
- 2. Ortiz, A. M. D., Outhwaite, C. L., Dalin, C., & Newbold, T. (2021)

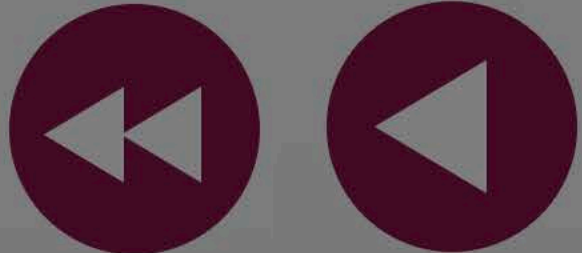
### INDIRECT LINKAGES

- 1. Alharthi, M., & Hanif, I. (2020).
- 1. Alharthi, M., & Hanif, I. (2020).
- 2. Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021).
- 3. Machingura, F., & Lally, S. (2017)"
- 3. Machingura, F., & Lally, S. (2017)"



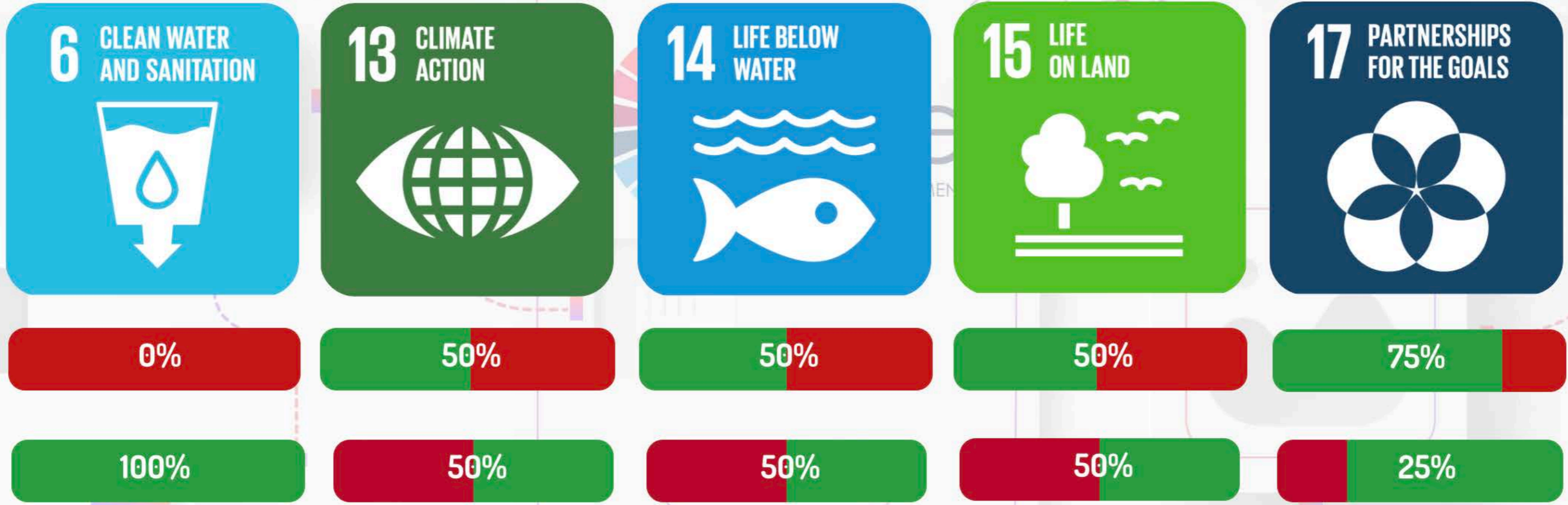
DIRECT LINKAGES

INDIRECT LINKAGES



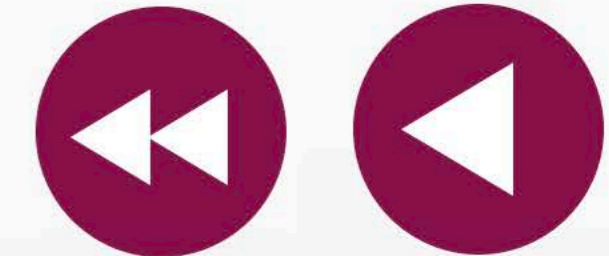
# GHG emissions, pollution & deforestation

■ POSITIVE LINKAGES  
■ NEGATIVE LINKAGES



DIRECT LINKAGES

INDIRECT LINKAGES





POSITIVE LINKAGES



NEGATIVE LINKAGES

# GHG emissions, pollution & deforestation



## DIRECT LINKAGES

1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021)

## INDIRECT LINKAGES

- 1. Corrado, S., Rydberg, T., Oliveira, F., Cerutti, A., & Sala, S. (2020)
- 2. Duarte, R., Pinilla, V., & Serrano, A. (2019)
- 3. Duarte, R., Pinilla, V., & Serrano, A. (2015)
- 4. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020)
- 5. Gkatsikos, A., & Mattas, K. (2021)
- 6. Lamastra, L., Miglietta, P. P., Toma, P., De Leo, F., & Massari, S. (2017)
- 6. Lamastra, L., Miglietta, P. P., Toma, P., De Leo, F., & Massari, S. (2017)
- 7. Miglietta, P. P., & Morrone, D. (2018)
- 7. Miglietta, P. P., & Morrone, D. (2018)
- 8. Serrano, A., & Valbuena, J. (2021)
- 8. Serrano, A., & Valbuena, J. (2021)
- 9. Zhong, H., Feng, K., Sun, L., Tian, Z., Fischer, G., Cheng, L., & Munoz Castillo, R. (2021)
- 9. Zhong, H., Feng, K., Sun, L., Tian, Z., Fischer, G., Cheng, L., & Munoz Castillo, R. (2021)

DIRECT LINKAGES

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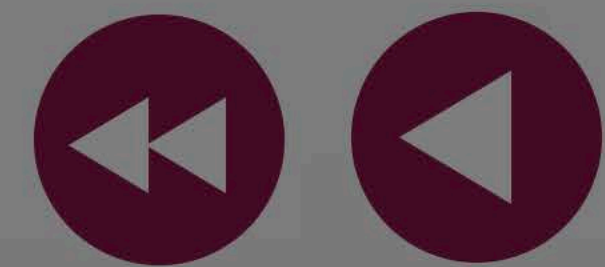


DIRECT LINKAGES

1. Ali et al. (2021)	5. Malak-Rawlikowska et al. (2019)
2. Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021)	5. Malak-Rawlikowska et al. (2019)
3. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021)	6. Shahbaz, M., Balsalobre-Lorente, D., & Sinha, A. (2019)
3. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021)	6. Shahbaz, M., Balsalobre-Lorente, D., & Sinha, A. (2019)
4. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021)	7. Verter, N. (2019)
	8. Wu, F., Wang, Y., Liu, Y., Liu, Y., & Zhang, Y. (2021)"
	8. Wu, F., Wang, Y., Liu, Y., Liu, Y., & Zhang, Y. (2021)"
	9. Hasan, S. T., Wood, M. O., Singh, S. (2022)

INDIRECT LINKAGES

1. Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021)	7. Shao, W., Li, F., Cao, X., Tang, Z., Bai, Y., & Yang, S. (2020).
2. Ayompe, L. M., Schaafsma, M., & Egoh, B. N. (2021)	7. Shao, W., Li, F., Cao, X., Tang, Z., Bai, Y., & Yang, S. (2020).
3. Corrado, S., Rydberg, T., Oliveira, F., Cerutti, A., & Sala, S. (2020)	8. Serrano, A., & Valbuena, J. (2021)
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5. Ortiz, A. M. D., Outhwaite, C. L., Dalin, C., & Newbold, T. (2021)	10. Verter, N. (2019)
6. Santeramo, F. G., Lamonaca, E., & Miljkovic, D. (2021)	
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# GHG emissions, pollution & deforestation

- POSITIVE LINKAGES
- NEGATIVE LINKAGES

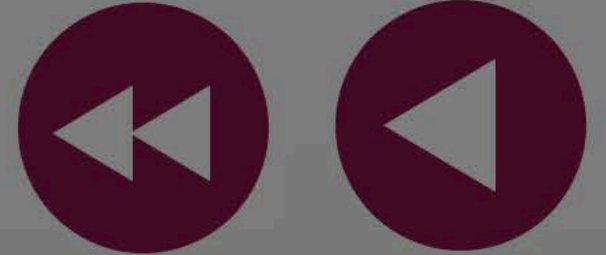
### DIRECT LINKAGES

- 1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021)
- 2. Kumar, R., Kumar, R. R., Stauvermann, P. J., & Chakradhar, J. (2019).

### INDIRECT LINKAGES

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# GHG emissions, pollution & deforestation

- POSITIVE LINKAGES
- NEGATIVE LINKAGES



## DIRECT LINKAGES

## INDIRECT LINKAGES

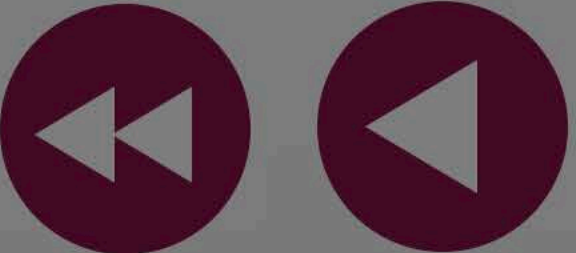
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- 1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021)
- 1. Downing, A. S., Wong, G. Y., Dyer, M., Aguiar, A. P., Selomane, O., & Jiménez Aceituno, A. (2021)
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DIRECT LINKAGES

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# GHG emissions, pollution & deforestation

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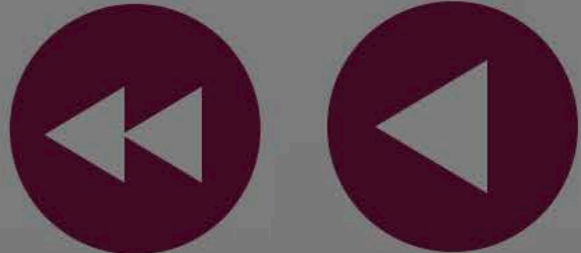
- Alvarado, R., Ortiz, C., Jiménez, N., Ochoa-Jiménez, D., & Tillaguango, B. (2021)
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- Machingura, F., & Lally, S. (2017)
- Miglietta, P. P., & Morrone, D. (2018)
- Tumaneng-Diete, T., Ferguson, I. S., & MacLaren, D. (2005)
- Tumaneng-Diete, T., Ferguson, I. S., & MacLaren, D. (2005)
- Wu, F., Wang, Y., Liu, Y., Liu, Y., & Zhang, Y. (2021)
- Wu, F., Wang, Y., Liu, Y., Liu, Y., & Zhang, Y. (2021)

6

DIRECT LINKAGES

INDIRECT LINKAGES



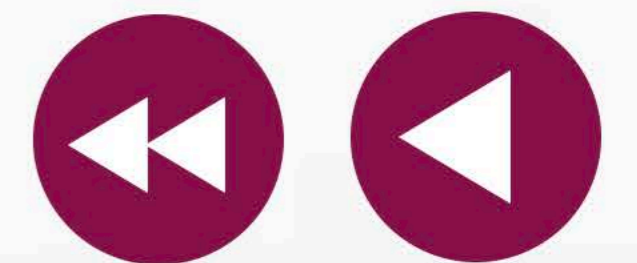
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DIRECT LINKAGES

INDIRECT LINKAGES



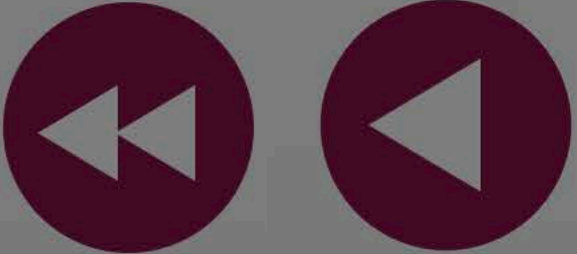
-  POSITIVE LINKAGES
-  NEGATIVE LINKAGES



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DIRECT LINKAGES

INDIRECT LINKAGES



-  POSITIVE LINKAGES
-  NEGATIVE LINKAGES

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## DIRECT LINKAGES

1. Shahbaz, M., Balsalobre-Lorente, D., & Sinha, A. (2019)
1. Shahbaz, M., Balsalobre-Lorente, D., & Sinha, A. (2019)
2. Vrontisi et al. (2020)
3. Adedoyin et al. (2021)
4. Gyamfi, B. A., Kwakwa, P. A., Adebayo, T. S. (2022)

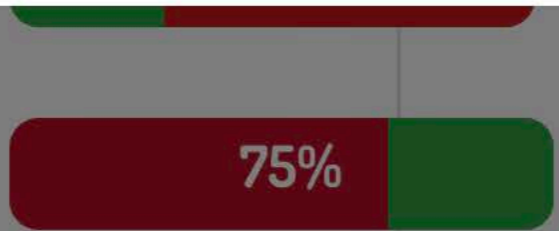
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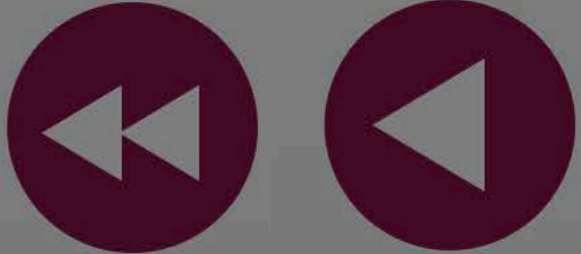
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DIRECT LINKAGES

INDIRECT LINKAGES




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-  POSITIVE LINKAGES
-  NEGATIVE LINKAGES

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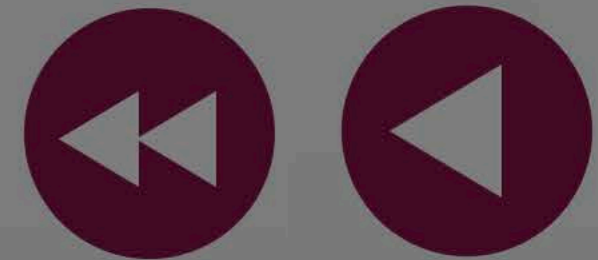




DIRECT LINKAGES

INDIRECT LINKAGES

DIRECT LINKAGES

INDIRECT LINKAGES



-  POSITIVE LINKAGES
-  NEGATIVE LINKAGES

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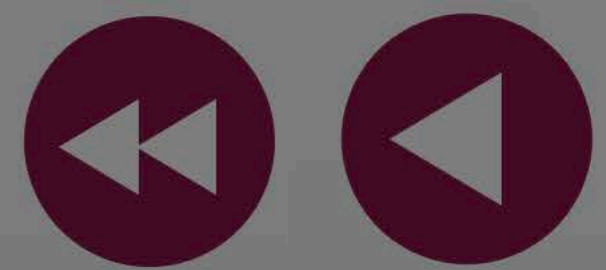
DIRECT LINKAGES



INDIRECT LINKAGES




DIRECT LINKAGES

INDIRECT LINKAGES



-  POSITIVE LINKAGES
-  NEGATIVE LINKAGES

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**DIRECT LINKAGES**

**INDIRECT LINKAGES**

1. Machingura, F., & Lally, S. (2017)

DIRECT LINKAGES

INDIRECT LINKAGES

